

**ASSESSMENT OF FACTORS INFLUENCING INFANT FEEDING PRACTICES
AMONG HIV POSITIVE MOTHERS IN RONGO DISTRICT, WESTERN KENYA.**

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DECLARATION

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DEDICATION

To my father and mother, Mr. Julius Wapang'ana and Mrs. Fridah Nabusino. You set me forth into the struggle of this life and the ember you lit is still burning. I also dedicate this work to my wife Knight Musinzi for relentless support and motivation in my study. God bless you all.

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ABBREVIATIONS

AFASS:	Acceptable, Feasible, Affordable, Sustainable and Safe.
ARV:	Antiretroviral.
CBS:	Central Bureau of Statistics
CCC:	Continuum of Comprehensive Care
CDC:	Center for Disease Control
DHS:	District Health Survey
FANTA:	Food and Nutritional Technical Assistance.
FACES:	Family Aids Care & Education
FGD:	Focus Group Discussion
HIV/AIDS:	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome.
HIV/IF:	Human Immunodeficiency Virus/ Infant Feeding.
IYCF:	Infant & Young Child Feeding
KAIS:	Kenya Aids Indicator Survey
KDHS:	Kenya Demographic Health Survey
KEMRI:	Kenya Medical Research Institute
KII:	Key Informant Interview

KNBS:	Kenya National Bureau of Statistics
LBW:	Low Birth Weight
MCH:	Maternal Child Health.
MOH:	Ministry of Health
MTCT:	Mother-to-child transmission.
NASCOP:	National Aids & STI Control Programme.
PAS:	Predictive Analytical software.
PMTCT:	Prevention of mother-to-child transmission
TBA:	Traditional Birth Attendant
UNICEF:	United Nations Children Education Fund.
VCT:	Voluntary Counseling & Testing
WHO:	World Health Organization
WRA:	Women of Reproductive Age

ABSTRACT

Infant feeding is critical and a key determinant of good nutrition and health status, survival and development. Breast feeding is universal and socio-culturally acceptable method of child feeding. Breast milk is nutritionally balanced and provides immunity against diseases. However, breast milk can transmit HIV from mother to child. This has posed public health dilemma. A lot of work has been done on HIV including MTCT but there remains a dearth of information related to appropriate feeding for infants of mothers infected with HIV. Some suggested infant feeding in theory have lots of merit but not much has been done to determine their practical feasibility especially in the African rural setting. The study was designed to assess infant feeding practices and viable breast milk alternatives for infants born to HIV positive mothers and the socio-cultural and economic conditions surrounding the choice of such practices in a rural community in Western Kenya. The study carried out in Rongo district between June and July 2011 had three objectives namely: to 1) determine maternal knowledge on mother-to-child transmission of HIV, 2) investigate the alternatives infant feeding practices used in the community and 3) determine factors influencing mothers' decision on the choice of infant feeding alternatives. Descriptive cross-sectional study design employing both quantitative and qualitative methodologies was used. Multistage sampling technique was used. Stratified sampling was used to sample 5 health facilities out of 18 to be included in the study. Health facilities were divided into three strata based on government classifications, that is, L2, L3 and L4. Health facilities in each stratum were assigned a numbers. This was written on a piece of paper and folded. 2 health facilities in each stratum were sampled using simple random sampling. 111 HIV positive mothers with children aged 0-12 months attending services in the sampled health facilities were randomly assigned numbers and systematically sampled to participate in the study. Data collection involved administration of semi-structured questionnaire to one hundred and eleven HIV positive mothers with infants. In addition, focus group discussion (FGD) guide was used to collect information from elderly women, women in age bracket 15-49 years and men whose spouses were within 15-49 years age bracket. Key informant guide (KII) was used to collect data from health facility in-charges. Data was analyzed using SPSS version 16.0. Maternal knowledge on MTCT of HIV was high (66.7%) in the study area. However, this had no association with maternal choice of infant feeding practice ($P=0.09$). On the other hand, maternal knowledge indicated some association with level of formal education attained ($P=0.07$) and exposure to other information received through health talks and or counseling from health workers or media ($P=0.06$). Despite high level of maternal knowledge, majority of respondents practiced mixed infant feeding before 6 months, which increases MTCT of HIV. The choice of alternative infant feeding practice was influenced by a number of factors among them; cultural attitudes, level of income and availability and affordability of food. Strong association was noted; income ($P=0.05$), cultural attitudes ($P=0.045$), pressure from family members ($P=0.045$), stigma and discrimination, belief about HIV transmission from mother to child ($P=0.05$) and HIV has no cure ($P=0.03$) and household food availability ($P=0.014$). Cow's milk is the most preferred infant feeding option (99.1%) followed by commercial infant formula (96.4%). Wet nursing is the least preferred option. In conclusion, the choice of infant feeding practice is not associated with level of maternal knowledge of MTCT of HIV. Commonly used infant feeding options include cow milk, porridge and commercial formula. World Health Organization guidelines on infant feeding in HIV recommends exclusive breast feeding to infants for six months.

CHAPTER ONE: INTRODUCTION

This chapter provides background information on overview of the study topic. It also provides details on statement of the problem, justification, research questions, hypothesis, objectives, significance & anticipated outputs and limitations and delimitations of the study. Each section is elaborate on the framework within which the study was conducted.

1.1 BACKGROUND INFORMATION

Infant feeding is critical in the first year of life and a key determinant of child survival and development. Breastfeeding is a universal socio-culturally acceptable, nutritious way to feed an infant and provides immunity (UNAIDS, 2009). However, research indicates that breast milk contributes about 15% risk of HIV transmission from an infected mother to the child (Nduati et al., 2000 and Datta et al., 1994) especially when mixed feeding is practiced before weaning. HIV prevalence in Rongo district is 14.1% compared to Nyanza province-15.3% and Kenya respectively 7.1% (KNBS, 2009). According to Ministry of Health report (2007), 7.4% of women attending antenatal care in Rongo district are diagnosed as HIV positive. In 2000, about 10% of the reported HIV and AIDS cases in Kenya were children under the age of five years. (UNAIDS, 2008). It is estimated that 35% of under-five mortality is due to HIV and AIDS (UNAIDS, 2008).

Prevention of mother-to-child transmission (PMTCT) of HIV is an important intervention in the prevention and control of HIV and AIDS to reduce child mortality and increase the rate of child survival. Mother-to-child transmission (MTCT) of HIV interventions

requires more than provision of drugs and commodities. Systems must be strengthened and communities need to be prepared for this program. Therefore, commitment to providing a range of core MTCT interventions is required to reduce the incidence of MTCT of HIV.

This requires a complete package of health care including maternity and family planning services with increased antenatal care, voluntary counseling and testing (VCT) for HIV, possible use of antiretroviral drugs and use of safe alternatives to the infected mother's breast milk (Oguta, 2001).

A culturally acceptable, low cost approach to infant feeding is essential to prevent breast milk HIV transmission. (Covington *et al.*, 2005). In countries not affected by HIV, improving infant feeding can reduce mortality by up to 19%. The impact could be greater in HIV affected populations if interventions that reduce HIV transmission through breast feeding could be successfully linked to strategies that improve infant feeding practices. However, this is confounded by complexity of identifying most appropriate infant feeding practices that fits household and social circumstances of mothers. World Health Organization (2010) recommends that in light of the effectiveness of ARVs, HIV infected mothers should continue breast feeding the infant until twelve months of age. This capitalizes on the maximum benefit of breast feeding to improve the infant's chances of survival while reducing the risk of HIV transmission. The guideline also recommends to national health authorities to promote a single infant feeding practice as a standard of care. The information about other practices should be made available. This calls on governments and donors to increase commitment to and resources for improving infant

feeding practices in HIV affected populations. The investment should be targeted to effectively prevent infants becoming infected with HIV through breast feeding, improve HIV free-survival of infants and achieve international developments goals, such as Millennium Development Goals (MDGs) and those set by United Nations General Assembly Special Session on HIV and AIDS (UNGASS).

The study explored the social, cultural and economic factors that influenced infant feeding practices. Recommendations for possible interventions to reduce MTCT of HIV via breast milk were provided.

1.2 STATEMENT OF THE PROBLEM

It is estimated that about 1000 children get infected with HIV daily through vertical transmission. According to UNAIDS (2008), breast milk contributes 15%. The risk increases (25-45%) with age of infant and maternal practice of mixed infant feeding before 6 months (KNBS, 2009), Supporting optimal infant feeding practices was a challenge for health systems (WHO, 2010). In the study area, this was contributed by limited number of health facilities, health workers, competing demands on time, inadequate capacity, illiteracy among mothers and poor information sharing. There are limited comprehensive intervention package available to post partum mothers in most health facilities in the study area. PMTCT interventions were offered in some MOH facilities through KEMRI-FACES project funded by Centre for Disease Control (CDC). Child survival is compromised due to limited access prevention services, in the study

area. There are escalated high rates of MTCT of HIV. HIV prevalence in pregnancy was 7.4% (MOH KAIS-sentinel report, 2009).

1.3 JUSTIFICATION OF THE STUDY

HIV and AIDS is a not just a national disaster but a global pandemic. Multidisciplinary efforts are needed to curb this problem that is reversing trends of child survival and development (UNAIDS 2008).

In Rongo district, a report released by Medical Officer of Health indicated that 7.4% of pregnant mothers are HIV positive. It is imperative that unborn babies and newborns should be protected from the scourge by preventing mother-to-child transmission. A successful approach to alternative feeding would be a less expensive intervention compared to ARV drugs used to minimize the viral load of HIV and improve the quality of life (UNAIDS, 2005).

Studies demonstrate that replacement feeding can reduce MTCT of HIV via breast milk and that several factors influence the success of this interventions (UNAIDS, 2005).

It is hoped that findings of this study will be helpful to ongoing program, the community, medical profession and at the national level.

1.4 RESEARCH QUESTIONS

1. What is the level of maternal knowledge on prevention of mother-to-child transmission of HIV?
2. What infant feeding practices are used in the study area?
3. What factors influence the HIV positive mother's decision on the choice of various infant feeding practices?

1.5 NULL HYPOTHESIS

The choice of infant feeding practices among HIV positive postpartum mothers is not associated with the level of maternal knowledge on MTCT of HIV and socio-economic factors.

1.6 OBJECTIVES

1.6.1 General objective

The purpose of this study was to assess factors that influence the choice infant feeding practices for infants born to HIV- positive mothers.

1.6.2 Specific objectives

1. To determine maternal knowledge on mother-to-child transmission of HIV.

2. To investigate the infant feeding practices used in the community.
3. To determine factors influencing mothers' decision on the choice of infant feeding practices.

1.7 SIGNIFICANCE AND ANTICIPATED OUTPUT

1. Findings of this study contributed to Millennium Development Goal # 6 which seeks to combat HIV/AIDS, malaria and other disease. This will in turn reduce the socio-economic burden currently experienced at national, community and household level.
2. The findings provided evidence based information to guide project managers on targeted project planning. This will ensure prudent allocation of resources based on need.
3. To researchers, the findings contributed to new knowledge in the field of learning and professional development
4. The government, churches and NGOs may also use the information obtained from the study to design educational materials & programs for MTCT prevention.

1.8 LIMITATIONS AND DELIMITATIONS

The study encountered a number of limitations during pre-testing of tools and data collection as follows:

1.8.1 Limitations

1.8.1.1 Poor road network

The study area was characterized with poor road network. The areas and homes that were sampled for data collection were located in remote places with poor access roads. Use of a vehicle proved difficult. The research assistants had to walk long distances to access the homes. This led to more time spent on data collection.

1.8.1.2 Long distance and respondents out of homes

The distance between homes of sampled respondents was far apart. This was worsened by poor road network. The research assistants walked long distances to access the homes of respondents. In some cases, respondents were not available in their homes at the time of visit. The homes of some respondents sampled to the study could not be traced despite using locals as research assistants. This forced research assistants to either wait or make return visits. This was time consuming and expensive.

1.8.1.3 Rainy season

Pre-testing of tools and data collection was conducted during rainy season. In many instances, research assistants had to stop the process due to heavy rains. Sometimes the team worked till late in the day to reach targets. This affected time which was allocated for evening reviews and contributed to prolonged period of data collection.

1.8.1.4 Communication barrier

Illiteracy levels in the study area were high. Effective communication was a problem especially during focus group discussions with elderly mothers. The lead researcher was not a local and therefore could not communicate in their local language. The research assistants similarly had some challenges of translating some terms used in the data collection tools into local terms.

1.8.1.5 Inadequate resources

The study was supported by the lead researcher who had limited financial resources. This created limited access and use of other facilitation resources such as vehicles, motor cycles and air time for communication. The research assistants had to walk most of time during data collection. Little amount was given for airtime to facilitate communication.

1.8.2 Delimitations

The lead researcher and team of assistants developed coping mechanisms that overcame all the limitations that surrounded the study. The team shared hired motor cycles to ride to far off distances and remote areas with poor road network to collect data. This was used in relay where they were dropped and picked when they were through to limit waiting costs. The team was supported by local leaders to mobilize respondents and get direction to respondents' homes. In periods of rainy weather, the respondents used

umbrellas. Reviews were done with the data collection team every evening as permitted to address emerging issues. Effective communication was enhanced by using an interpreter of local vernacular to guide focus group discussions with men, women and elderly women.

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CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

The literature review is discussed in four sections aligned to the study objectives. Desk review was done to confirm findings from related studies. This provided basis for comparative analysis.

Section one of this chapter introduces key facts about HIV/and AIDS. It elucidates HIV and AIDS as a pandemic and of national concern provides current HIV prevalence at national, provincial and district levels and the magnitude of effect to children.

In section two, HIV/and AIDS and infant feeding practices were reviewed. A conceptual framework by Lutter (2000) was adopted to provide framework for the study. Section three entails key issues, research findings on infant feeding practices by HIV positive mothers and challenges associated with such options.

The last section provides a review on existing research findings on social and economic factors that influenced the maternal choice of infant feeding practices. This provided a rich evidence of findings on maternal knowledge, culture, norms, social stigma, discrimination, issues on age, family influences, beliefs around HIV transmission through breast milk and quality of breast milk. This provided evidence base, comparison and interpretation of findings for this study.

2.2 OVERVIEW OF HIV& AIDS EPIDEMIC

HIV& AIDS has caused a severe and generalized epidemic and reversed trends gained in child survival (UNAIDS, 2010). In Kenya HIV prevalence is 6.3 % (UNAIDS, 2012) compared to Nyanza province 13.9 % (NACC, 2012) and Rongo district 14.1%. This is about twofold the national average. HIV prevalence among women of reproductive age (WRA) in Rongo district is 7.4% (MOH-KAIS, 2009) hence the need for PMTCT services. More than 1000 children are newly infected with HIV daily. MTCT accounts for 90% of HIV transmission in children during pregnancy, labour, birth or breast feeding (UNAIDS, 2010). Globally, breast milk contributes 15% of HIV risk (UNAIDS, 2010). Breast feeding beyond 24 months increases infection by between 25-45% (Nduati et al., 2000). Every hour about 30 children die as a result of AIDS (UNAIDS, 2010) Mother-to-child transmission of HIV interventions requires more than provision of drugs and commodities. Systems must be strengthened and communities prepared for these programs. Therefore commitment to provide a range of core MTCT interventions is required to reduce the incidence of MTCT of HIV.

2.3 MATERNAL KNOWLEDGE ON PMTCT OF HIV

Maternal knowledge in this context referred to the extent to which mothers understood and defined HIV & AIDS, modes of transmission and prevention of HIV from mother to child. Several research studies have done been to assess the level of knowledge among mothers in the context of HIV.

A study conducted in Western Kenya (Oguta et al., 2001) indicated that maternal knowledge on mother to child transmission (MTCT) of HIV among the study population was low (8.9%). The study reported poor timing on effective prevention of MTCT of HIV. In general, 35.7% had high MTCT knowledge, 45.5% were average while 5.4% had poor MTCT knowledge. The general belief was that any HIV infected mother would automatically infect her baby in the womb and that it was not preventable.

HIV positive mothers breast feed their babies because they do not know their sero-status at pregnancy or early enough. Many of them prefer cow milk as an alternative feed because it is acceptable, affordable and feasible and can be sustained. However, in the general population, majority lactating women breast fed their babies.

Wet nursing for instance was practiced by elderly women, who have reached menopause, to feed orphaned babies. Young and middle aged women are reluctant to use wet-nursing.

Formula feeding is recognized as a feeding option but not widely practiced because it is expensive and may also expire before use.

Goat milk, expressed breast milk and powdered milk is rarely used. The ideal of expressed milk sounded strange to them since it was not normal to milk a human, expressing breasts cannot produce enough milk to satisfy the baby and may make breasts painful.

Findings of a study conducted in Nairobi to determine the relationship between feeding practices and nutritional status of infant born to HIV positive women indicate that 31% of counseled respondents practiced mixed feeding six weeks after delivery (Kiarie et al.,

2004). In another study done by Chopra et al. (2005) in South Africa, level knowledge on infant feeding among mothers was low. This was attributed to lack of consistent access to accurate, appropriate and simple information. This hindered effective adoption and adherence to recommended optimal infant feeding practices. In normal situations, mothers are supposed to receive the information from health workers during health care services delivery. A study by Koniz (2004), points out that counselors and health workers are also inadequately informed and not aware of existence of updated guidelines. This was associated with inadequate refresher trainings in context of HIV, counseling, support facilities and essential resources (Swartzendruber et al., 2002). Staff shortage and inadequate time to properly counsel mothers posed more barriers to informed infant feeding choices. (Ehrnst et al., 2005).

According to Sebalda et al., (2006) lack of knowledge and confidence in the recommended feeding options made it difficult for respondents to cope. Mothers did not have accurate information on infant feeding practice and were unable to understand the disadvantages of exclusive breastfeeding compared to mixed feeding. In this dilemma, Mothers preferred mixed feeding. They believed that exclusive breastfeeding was customarily not feasible beyond three months. The belief was that breast milk was insufficient for a fast growing child. Some care givers belief that babies need water in the first month because they 'feel thirsty'. Many reportedly gave babies water before initiating breastfeeding. Boiled water and gripe water were often used for relief of abdominal colic. Apart from water, other complementary foods were reportedly introduced to infants before three months. Interviewed mothers reported that they

introduced light porridge mixed with cow milk with belief that breast milk was not adequate to make the baby grow ‘fat and shiny’, an expectation by kin and neighbours. Mothers were generally concerned that exclusive breast feeding might raise suspicion of HIV positive status (DeCock, 2000).

Cow’s milk diluted with water and sugar was commonly used to supplement breastfeeding. However, it was not generally regarded as an adequate replacement for breast milk unless the mother past on or had poor health, a reason not breastfeeding.

2.4 HIV & AIDS AND INFANT FEEDING PRACTICES

Infant and young child feeding in the context of HIV poses significant challenges due to the risk of transmission of the virus via breastfeeding. Prior to WHO (2010) guidelines on HIV and infant feeding, avoidance or early cessation of breastfeeding seemed logical or appropriate. However, the repercussions for the health and survival of the infants were serious, with studies showing much higher mortality rates due to diarrhea, malnutrition and other diseases in non-breastfed children. The 2010 recommendations are based on evidence of positive outcomes for HIV-free survival through provision of ARVs to breastfed HIV-exposed infants. Thus the focus is now firmly on ensuring HIV-free survival, not just on preventing transmission. The 2010 UN guidelines provide a much clearer pathway towards this goal.

Infant feeding practices vary with individuals in different communities. The comparative preferences are dependent on social, cultural and economic factors. These include maternal willingness and freedom to choose preferred method, level of maternal

knowledge on infant feeding, physical & social support provided during pregnancy, childbirth and postpartum experiences. These factors are, in turn, influenced by familial, medical, cultural attitudes & norms, demographic, economic conditions, commercial pressures, and national policies. Thus, to promote optimal breastfeeding and complementary feeding practices, interventions should target individual mothers and the context in which they live.

Infant feeding is categorized into breast feeding and replacement feeding. Replacement feeding involves feeding infants on commercial infant formula feeding, home prepared infant formula, modified breast feeding (expressed heat treated breast milk and wet nursing) and use of unsuitable breast milk substitutes (Oguta et al., 2001).

2.4.1 Breastfeeding

Breast feeding is the normal way and breast milk is all the baby needs for the first six months of life (Burgess et al., 2009). It is a universally accepted infant feeding practice. Optimal breast feeding carries significant health benefits for infants and young children (Oguta et al., 2001). It reduces infant morbidity and mortality and contributes to good health status, survival and development. Breast milk has essential nutrients, antibodies and enzymes that protect against infections and strengthens the infant's immune system (DeKock et al., 2000). Without intervention, about 35% of HIV-positive pregnant women will pass on the infection to their babies during pregnancy, delivery and post-natally through breastfeeding. Without preventive interventions, about 10-20 per cent of infants

born to infected mothers will contract the virus through breast milk if breastfed for two years (WHO, 2010 and FANTA, 2004).

WHO (2010) recommends mothers to safely breast feed exclusively for 6 months and continue breastfeeding until 12 months alongside complimentary feeding after 6 months provided that they or their infants receive ARV drugs during the breast feeding period. Exclusive breast feeding is where an infant receives only breast milk and no other liquids or solids, not even water, with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines (Burgess et al., 2009). This has been shown to give infants the best chance to be protected from HIV transmission in settings where breastfeeding is the best option.

Studies show that complementary foods introduced to an infant less than 6 months of age) damages the already delicate and permeable gut wall of the infant and allows the virus to penetrate easily (UNICEF, 2010). As a result UNICEF, WHO and many health providers recommended exclusive breastfeeding for about 6 months.

Recent studies in South Africa suggest that combination of breastfeeding and artificial feeding has more potential harm to the infant in the first months of life and that those who are exclusively breastfed, at least for the first 3 months, may face a significantly lower risk than was previously thought (Coutsoudis *et al.*, 1999). The study suggests that feeding other solids or fluids in addition to mother's milk in the first months of life may be what injures the baby's gut and allows the HIV to enter the body tissues. It is believed that lower transmission among exclusively breastfed infants is attributed to a healthy gut epithelium, which acts as a viral barrier, and that breast milk contains immune factors

which have been shown to have anti-viral and anti-HIV effects in vitro (Wahl *et al.*, 1997).

HIV negative women and those with unknown status should be encouraged to continue breastfeeding. Confidentiality, informed choice, protection, respect and fulfillment of human rights are key issues in HIV situation. Key rights of clients need to be observed, for example, right to health, survival, information and informed consent (Campbell & MacPhail, 2002).

2.4.1.1 Natural/traditional breast feeding

This refers to a mothers directly being in contact with infant to breast feed. The infant suckles breast an hour after birth. This method is most preferred since it enhances rooting and attachment of infant to the mother. This feeding requires physical presence of the mother and the child (Oguta *et al.*, 2001).

2.4.1.2 Modified breast feeding

Other forms of breast milk include breast milk banks and wet-nursing are good options. Breast milk banks are generally used as a source of breast milk for a short time especially for the sick and LBW new born. They are not usually an option for meeting the nutritional needs of infants for a longer period. It should be certain that donors are screened for HIV and that donated milk is correctly pasteurized (MOH, 2002).

2.4.1.2.1 Wet nursing

Wet nursing is where an infant is breastfed by a woman other than his/her mother. Wet-nursing may be considered in communities where this option is accepted. The wet-nurse must understand and agree to the implications of HIV counseling and testing (HCT), as she will need HIV testing before wet nursing and 6–8 weeks after starting. In addition, she should be counseled about HIV infection and how to avoid infection during breastfeeding. There is anecdotal evidence of infected infants transmitting HIV to their HIV-negative breastfeeding mothers. Where the overall prevalence and incidence of HIV is low, and HIV has thus not spread to significant levels in any of the subpopulations, HCT of a potential wet nurse is still indicated. If in these circumstances no HCT is available, the potential wet nurse should undergo a HIV risk assessment as a minimum requirement (WHO, 2010).

A study by Sebalda *et al.*, (2006) indicated that wet nursing by a close relative can be used as feeding option for orphaned infants and those born of sick mothers. However, due to fear of HIV transmission, wet nursing is no longer considered safe and has been discontinued.

2.4.1.2.2 Heat treatment of expressed breast milk

The WHO (2006) recommends heat-treated breast milk as one of the infant feeding options in the context of HIV. However, direct boiling of breast milk causes significant nutritional damage, while standard pasteurization for 30 minutes requires temperature gauges and timing devices that are unavailable in many communities. Flash-heat is a

recently developed, simple method that a mother can implement over an outdoor fire or in her kitchen. However, field studies are urgently needed to determine the feasibility of in-home flash-heating of breast milk. Pasteurization of expressed breast milk at about 65 °C for 30 minutes or boiling and then cooling in a refrigerator or cold water may also be a good option especially for sick and low birth weight (LBW) babies in a hospital setting. Heat-treated breast milk is still nutritionally superior to other milks, though heat-treatment reduces the level of the antibodies (Oguta et al, 2001).

2.4.2 Replacement feeding

Replacement feeding is also referred artificial feeding. It is used in the context of HIV to describe feeding infants who are receiving no breast milk with a diet that provides the nutrients infants need until the age at which they can be fully fed on family foods. During the first six months, replacement feeding should be with a suitable breast milk substitute, which definition includes infant formula. Infant formula is a breast milk substitute formulated industrially that should be in accordance with applicable Codex Alimentarius standards [developed by the joint FAO/WHO Food Standards Programme] (WHO, 2006). This includes commercial infant formula and generic infant formula (Oguta et al., 2001) Replacement feeding should aim to provide the entire infant's nutritional requirements as completely as possible.

Breast milk alternatives lack special nutrients, vitamins and antibodies that protect against bacterial infections. Bacteria may therefore contaminate the feed during preparation, so it is imperative that high hygienic standards are kept during preparation

and feeding. This calls for access to clean water, fuel and sufficient time. Even where hygiene is good, artificially fed infants suffer five times as many bacterial infections as breastfed infants, and in situations where hygiene is poor, the risk of death from diarrhea in artificially fed young infants may be twenty times that of breastfed infants (WHO, 2003). Families feeding their infants with breast milk alternatives therefore need access to health care.

2.4.2.1 Commercial infant formula feeding

Commercial infant formula is manufactured for sale. It is branded by an individual manufacturer and is available for purchase in local markets. It is bio-chemically the most suitable replacement feed for the new born. Its formulation is based on modified cow's milk. Soy protein has been found to be closest in nutrient composition to breast milk (Sebalda *et al.*, 2006). It is usually adequately fortified with micronutrients including iron. It is a good option if the family has a reliable access to sufficient formula, clean water, fuel, clean utensils, adequate skill and time to prepare it accurately and hygienically.

It is important that women are counseled about the different possible infant feeding alternatives and that maternal choice is respected. Ideally, all babies should be fed on milk only for the first 6 months after which a balanced complementary food is added to the diet.

2.4.2.2 Generic infant formula

This is unbranded infant formula and is not available on the open market, thus requiring a separate supply chain. After six months the suitable breast milk substitute should be complemented with other foods (WHO, 2006).

2.4.3 Mixed feeding

This is infant feeding involving combination of breastfeeding with feeding other fluids, solid foods and/or non-human milk, such as infant formula or animal milks. Predominant breastfeeding is where breastfeeding is combined with small amounts of water or water based drinks only. Partial breastfeeding is a type of mixed feeding where breastfeeding is combined with non-human milk or food based fluid or solid food. An infant who is either predominantly or partially breastfed is considered to be receiving mixed feeding (WHO, 2006).

Mixed feeding before 6 months is not recommended because studies suggest it carries a higher risk than exclusive breastfeeding (WHO, 2010). Before this period the baby's stomach and intestinal lining is not fully developed and cannot withstand solid food. Mixed feeding may damage the lining of the baby's stomach and intestines and thus makes it easier for HIV in breast milk to infect the baby (UNICEF, 2010).

Unsuitable breast milk substitutes

Skimmed and sweetened condensed milk are not recommended for feeding infants below 6 months of age. Skimmed milk has no fat and therefore do not provide adequate energy. In urban areas of Kenya, there's both skim and full cream milk in the market. Fruit juices, sugar, water, dilute cereal gruels and milk products like yoghurt are not recommended for replacement feeding to infants below 6 months of age

2.5 FACTORS INFLUENCING MATERNAL CHOICE OF INFANT FEEDING PRACTICE

2.5.1 Level of maternal knowledge

HIV positive women face difficult choices about how to feed their infants (Latham & Preble, 2000). They face challenges of inadequate information related to HIV and safe infant feeding. A lot of risks are associated with replacement feeding especially in poor resource settings characterized by poor sanitation and economic constraints. The basic principle of 'informed choice' requires that HIV positive women are provided with adequate information before making decision on appropriate infant feeding option (United Nations, 1990).

2.5.2 Culture and norms

Culturally, most African communities practice mixed feeding instead of exclusive breastfeeding (Bland et al., 2002). In most circumstances, primary health practitioners

advise mothers according to formal guidelines without being adequately aware of the mothers' preferences, skills and home circumstances.

It is therefore imperative for health care programmes and providers to better understand mothers' social circumstances, their beliefs, motivations and behaviours in order to intervene in ways that permit mothers to 'hear' and respond.

Customarily, the baby is put to the breast within a short time after delivery. In subsequent weeks breast feeding is used as a comforter/pacifier. The success of reducing HIV transmission through breast milk depends on its ability to change strongly held cultural beliefs and practices.

2.5.3 Social stigma and discrimination

Social stigma is strongly associated with HIV and the relationship of choice of infant feeding mode (Oguta et al., 2001). In a community where breastfeeding is normative in the strongest sense of the word, choosing replacement feeding would seem abnormal, even prior to the advent of the HIV pandemic. Now there has been sufficient public discussion about transmission of the virus through breast milk that choosing to bottle feed is tantamount to announcing that one is HIV positive.

As a consequence of negative community attitudes, women face a very difficult decision about whether to disclose their HIV status, when they learn they are infected.

2.5.4 Family influence.

This social bias may leave the women with no other option but to breastfeed the infant thus increasing the risk of HIV through MTCT via breast milk (FANTA, 2004).

According to Thairu *et al.*, (2000), elderly mothers readily disclose their HIV status. Young are in denial of their status and more likely for a longer period compared to older adults (Campbell & MacPhail, 2002; Eaton *et al.*, 2003).

It is difficult to practice exclusive breastfeeding in situations where family members do not understand its value. This is likely to be acute in young women. Adolescent mothers frequently receive advice from their families to practice mixed feeding which conflict with advice from health care providers. As described by Bentley *et al.*, (1999), adolescents may also be inexperienced and insecure about their own beliefs and logically turn to their families, particularly their mothers and grandmothers, for parenting help. In event where 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.

2.5.5 Beliefs

Statements that relate to transmission of HIV through breast milk are given by mothers with explicitly associated fear of infecting the infant. On the other hand, the potential for

transmission is sometimes discussed without an explicit statement of fear. This clearly influences the mother's choice of infant feeding option (Thairu, 2000).

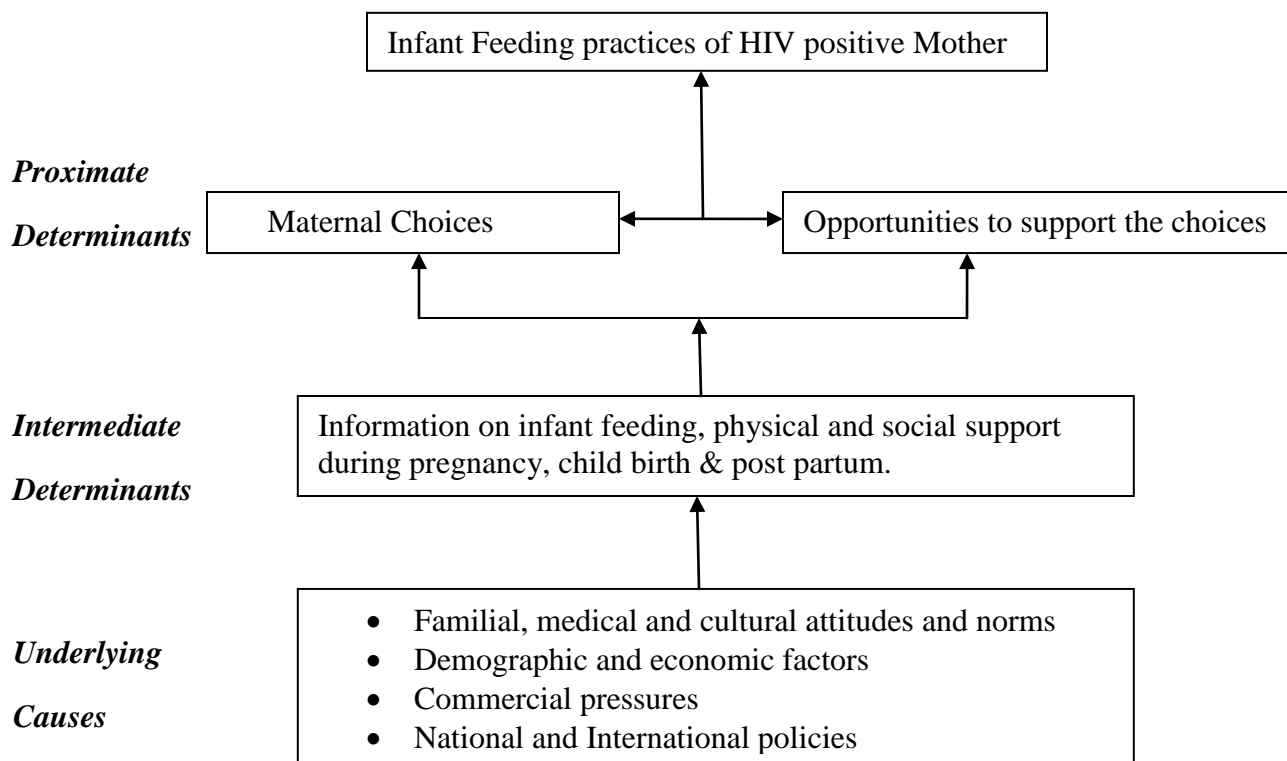
Mothers know that breast feeding protects the infant against diseases. Often the value of breastfeeding is juxtaposed to formula as in the following statement: 'the baby who is formula fed always gets sick'. The strength of the belief in the superiority of breast milk over formula is so great and therefore may influence maternal choice on infant feeding option.

The importance of hospital breastfeeding policy as recommended by WHO (2010) and attitudes of health personnel towards breastfeeding practices has been repeatedly documented (Weng et al., 2003). The effect of pro-breastfeeding policies in situations of endemic HIV infection and a high level of social stigma associated with the disease has not been adequately appreciated. In reality, the 'baby Friendly hospital initiative' does not preclude the use of replacement feeding in medically indicative situations (WHO/UNICEF, 1998). However, mothers need privacy and support for replacement feeding, on one hand to allow them to keep their HIV status confidential and on the other to prevent erosion of breastfeeding policy by the hospital.

2.5.6 Economic factors

Infant feeding has cost implications and greatly influences maternal choice. This is particularly evident among mothers in low resource settings. According to FANTA (2004), the choice of infant feeding should be based on the AFASS principle. That is, the

practice chosen should be affordable, feasible, accessible, safe and sustainable. Mothers in low resource settings rarely opt for commercial formula because it is expensive and therefore not feasible and sustainable (WHO, 2006). HIV mothers who wish to opt to practice replacement feeding but do not have adequate resource to meet the cost of buying infant commercial food may find themselves in dilemma. In some instances, these may result into dilution of food fed to an infant or unconsciously practice mixed feeding. Sebalda (2006) points out, mothers are generally uncertain about the use of infant formula. Those who have used it experienced problems in calculating the right amounts of formula powder and water.



Source: Adapted from Lutter C.K (2000).

Figure 2.5.6 Conceptual framework on infant feeding practices

CHAPTER THREE: MATERIALS AND METHODS

3.1 INTRODUCTION

This chapter covers ten sections and elaborates details related to study design, dependent and independent variables, location of study, target population, sampling procedure, sample size, construction of research instruments, pre-test of data collection tools, actual data collection, data analysis plan and ethical clearance. This provided framework onto which the findings of the research were founded.

A cross-sectional study design was used to collect data from Rongo district, Western part of Kenya. Key respondents were HIV positive women of reproductive age bracket (15-49 years), residing in Rongo and had a child aged 0-12 months. The study aimed to assess the cause-effect of the level of maternal knowledge and classical socio-economic factors (independent variables) on infant choice of maternal alternative infant feeding practices. Five research assistants were trained and collected for five days. Pre-test was done and corrections made on the tools before actual data collection. Semi-structured questionnaire was used to collect data from individual respondents while key informant (KII) and focus group discussion (FGD) guides were used to collect data from health facility in-charges; elderly women, and men and women respectively. Research permission was received from legal authorities (Kenyatta University Ethical Research Committee, Kenya National Council of Science & Technology, Ministry of Public Health & Sanitation and District

Commissioner). Verbal informed consent was sought from individual respondents, FGD and KII members.

3.2 LOCATION OF STUDY

The study was carried out in the greater Rongo district, Western Kenya. The district borders Homa-Bay and Kisii South districts to the North, Migori and Trans Mara districts to the East. In the south, Rongo shares the boundary with Trans Mara and Gucha districts. The district is 848.7 km² with a population of 325,211 people (KNBS, 2009). There are 167,876 females of which 87,849 are women of reproductive age (Ministry of Planning & Vision 2030, 2008-2012). The district is divided into three administrative divisions; Rongo, Awendo and Uriri, seventeen locations and fifty-five sub-locations. There are two parliamentary constituencies in the district namely: Rongo and Uriri. Rongo constituency comprises of Awendo and Rongo divisions while Uriri constituency is made up of Uriri division. The district has 37 health facilities, 18 of them offer PMTCT services (Rongo MOH, 2010). The study area was chosen because it was among districts with high HIV prevalence (14.1%).

3.3 TARGET POPULATION

The study involved HIV positive mothers aged 15-49 years from Rongo district. Health workers from the health facilities which offered PMTCT, traditional birth attendants (TBAs) and community midwives were the key informants.

3.3.1 Inclusion criteria

The respondents who were eligible to participate in the study included mothers of reproductive age bracket (15-49 years) aware of their HIV sero-status, had a child aged 0-12 months and were residents of Rongo for a period not less than 6 months. The residents also enrolled with KEMRI –FACES funded project. Respondents who gave verbal informed consent participated in the study.

3.3.2 Exclusion criteria

Ineligible respondents included those who were young or older than the framed age bracket (15-49 years), had no infant or had a child over 12 months of age.

Respondents and or their children who were sick with opportunistic infections (OI) and unable to participate in the interview were excluded. Those who were non residents, had stayed in the study area for less than 6 months or were not enrolled with KEMRI-FACES project were excluded from the study. Respondents who did not give verbal informed consent were also excluded from the study.

3. 4 STUDY DESIGN

Cross-sectional descriptive study design was used to collect qualitative and quantitative data. This design was preferred because it was relatively cheap and had ability to collect diverse data within a short period required to analyze cause-effect relationships in representative subset of a population.

3.5 VARIABLES

3.5.1 Dependent variables

1. Infant feeding practices.
2. Exclusive breastfeeding was used as the reference feeding practice

3.5.2 Independent variables

1. Maternal knowledge on MTCT of HIV
2. Socio-economic factors

3.6 SAMPLING PROCEDURE AND SAMPLE SIZE

3.6.1 Sampling procedure

The study employed multistage sampling. In the first step, stratified sampling was used to sample 5 health facilities out of 18 to be included in the study. The health facilities were categorized into three strata as L2, L3 and L4. This was based on government of Kenya Ministry of Public Health & Sanitation classification of health facilities. L2, L3 and L4 mean dispensary, health centre and district hospital. Each health facility in each stratum was assigned a random number. The numbers were written on a piece of paper, folded and mixed up by stratum for sampling. Two health facilities in each stratum were sampled using simple random sampling. The L4 stratum had only 1 health facility, which

was the district hospital. This was had 1 chance of being sampled. A list of HIV positive mothers/clients enrolled for HIV continuum of comprehensive care services (CCC) in each health facility that was sampled was provided. The client enrollment/registration numbers assigned by each sampled health facility was used. The respondents who met the inclusion criteria were systematically sampled and recruited in the study.

3.6.2 Sample size

The district HIV prevalence among pregnant women was 7.4% (DHS, 2007). Assuming standard error of 5% and confidence interval (C.I) of 95%, the sample size for this study was determined using Fisher's formula (Fisher et al., 1991):

Where:

n: Is the sample size

Z: The value corresponding to the normal deviate (confidence limit) taken as 1.96 at 95% confidence level

p: Proportion of HIV infected women in the study population

q: Proportion of women not infected with HIV in the population (1-p from infinite population)

d: Is the acceptable degree of accuracy (SE) desired (0.05)

$$n = \frac{Z^2 pq}{d^2} = \frac{(1.96 \times 1.96) \times 0.074 \times 0.926}{0.05 \times 0.05} = 105 \text{ Subjects}$$

Allowing fall out rate of 10% the study targeted 115 respondents.

3.7 CONSTRUCTION OF RESEARCH INSTRUMENTS

The study applied both quantitative (questionnaire) and qualitative (Key informant interviews and focus group discussion) tools to collect data from different categories of respondents. Data that was collected using KII and FGD guides was triangulated with that collected from individual respondents using questionnaire. This was used to analyze, discuss and interpret the results.

3.7.1 Questionnaire

Semi-structured questionnaire was designed and used to collect quantitative data from individual respondents. The choice of questionnaire as tool was due to ease to administer, relative low cost and its versatility to collect both quantitative and qualitative data.

The questionnaire was designed to get information on the following:

- Demographics- age, marital status, household size, level of education, occupation and area of residence.
- Physical and social support during pregnancy, child birth and postpartum.
- Familial, medical, cultural attitudes and norms relating to infant feeding.
- Reproductive history of the woman

- Maternal knowledge on HIV, modes of transmission, MTCT through breast feeding, infant feeding options in context of HIV
- Existing methods of prevention of transmission.
- Socio-economic factors that influenced the choice of infant feeding.

3.7.2 Key informant interviews (KII)

The health facility in-charges from 5 sampled health facilities were interviewed using KII. Key informant interview guide was used to collect qualitative data to provide similarities and comparisons to clarify information obtained from FGD. This tool collected data on perceived level of maternal knowledge on HIV transmission, prevention, key facts on mother to child transmission of HIV and existing socio-cultural norms, beliefs, misconceptions and practices around HIV and infant feeding. Data on vital statistics around the key study areas were also collected.

3.7.3 Focus group discussions (FGD)

Focus group discussion guide was designed to collect qualitative data from community regarding traditional and possible alternatives to breast feeding and knowledge on vertical transmission of HIV. Two groups were selected for FGD involving mothers of reproductive age (15-49 years) and men whose spouses were in age bracket 15-49 years.

The third group involved six experienced elderly women knowledgeable on traditional breastfeeding alternative practices was selected and in-depth interviews conducted with them. The selection of elderly women was on the basis of social roles played around the subject matter, that is, 2 were traditional birth attendants, 1 caregiver of orphans and 1 retired mid wife.

This tool was designed to collect data on level of income, household food security, maternal knowledge on HIV transmission, prevention, key facts on mother to child transmission of HIV and existing socio-cultural norms, beliefs, misconceptions & practices around HIV and infant feeding.

3.8 PRE-TEST OF DATA COLLECTION TOOLS

Six research assistants were trained for 1 day on how to administer the data collection tools before a pre-test was conducted. Simple random sampling was used to select a location where pre-test on tools was done. The data collection tools mainly; questionnaire, FGD and KII guides were administered as pre-test to individual respondents, TBAs, elderly women, men, women and health facility-charges in Central Kamagambo location, Rongo division, Rongo district. Pre-test was conducted on the second day of the training to test validity, content, reliability and consistency on the tools. Debrief meeting was held on the third day and issues which emerged from the pre-test regarding use of the tools addressed. Sections which were cited as in-consistent, invalid and weakly constructed or were likely to give unreliable data were reviewed and corrected.

3.9 DATA COLLECTION

The study collected data from both hospital and community settings, for five days, with the assistance of five research assistants. The lead researcher and lead assistant conducted key informant interviews and focus group discussions. Data from individual respondents were collected using interviewer administered semi-structured questionnaire. Guided focus group discussions (FGD) and key informant interviews (KII) were used to collect qualitative data from health facility in-charges.

3.10 DATA ANALYSIS

The filled questionnaires were checked for completeness and then data were entered into the computer. The fields were checked and validated before analysis. Descriptive statistics were computed using SPSS Version 16.0. This constituted frequency tables, charts, proportions, means and standard deviations with minimum and maximum values. Bivariate analyses were computed and associations made between maternal knowledge and uptake of alternative infant feeding and influential socio-economic factors. The Chi-square test was used to establish the association between categorical variables such as the level of maternal knowledge, socio-economic status and choice of alternative infant feeding practices used by HIV positive mothers, while the t-test was used to test mean difference of continuous variables. The $p < 0.05$ was used as cut-off point to determine statistical association.

3.10.1 Determination of MTCT knowledge index

A total of eleven questions (see appendix 2.0) were used for scoring to develop MTCT knowledge index. The aspects of MTCT studied were whether a child could get HIV, timing of MTCT of HIV during pregnancy, delivery and breastfeeding and whether MTCT was preventable. A response was considered valid if it provided the correct answer, that is, 'yes' response. Two points were given for every valid response and zero for invalid response. A total score was calculated out of 22 points and used as MTCT knowledge indicator. The respondents overall knowledge on MTCT of HIV was then rated on scale of 0-22 points and the respondents graded using 3-cut off points as follows;

1=Low knowledge (0-7 points)

2=Average knowledge (8-15 points)

3=High knowledge (17-22 points)

The ultimate knowledge of the population was taken by the number who provided valid responses for all the 22 questions (Oguta et al., 2001).

3.11 ETHICAL CLEARANCE AND INFORMED CONSENT

The study was approved by National Council of Science & Technology, Kenyatta University Ethical Research Committee, Ministry of Public Health & Sanitation and Rongo District Commissioner. Verbal informed consent was sought from 111

respondents before an interview was conducted. Confidentiality was assured to respondents who participated in the study.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1 INTRODUCTION

This chapter covers results and discussions under 4 main sections mainly socio-demographic characteristics, level of maternal knowledge on MTCT of HIV, alternative infant feeding and socio-economic factors that influence the choice of alternative infant feeding practice. Discussions of the results are provided in each section.

Section one covers the socio-demographic characteristics (age, marital status, religion, education) of the study respondents. The respondents were women of reproductive age 15-49 years. Majority were in age cluster of 20-24 years, staying single and attained primary level education.

Section two of this chapter covers maternal knowledge on MTCT of HIV and infant feeding practices. Findings of the study show that level of maternal knowledge among study participants was high. However this did not have statistical association with the choice on infant feeding.

Section three presents results on common infant feeding alternatives. Majority of respondents practiced mixed feeding before the infant was 6 months. Cow milk was the commonest alternative preferred by respondents.

The last section presents results on socio-economic factors that influenced maternal choice of alternative infant feeding practice. The factors included income, culture, norms, practices, family influence, beliefs & misconceptions and state of food & nutrition

security. Results indicate that majority of respondents were low income earners and that these factors were associated with maternal choice of alternative infant feeding practice.

4.2 SOCIO-DEMOGRAPHIC CHARACTERISTICS

A total of 111 out of 115 HIV positive mothers of reproductive age bracket 15-49 years with infants aged 0-12 months participated in the study while 4 mothers dropped from the study. The respondents were systematically sampled from each of the 5 health facilities stratified as follows; Stratum L2: Ngodhe dispensary 22 and Ngere dispensary 13, Stratum L3: Minyenya health centre 25, Lwala health centre 21 and Stratum L4: Rongo district hospital 30.

4.2.1 Age

The highest proportion of mothers (34.2%) was in age group 20-24 years while 5.4% were teenage. The mean maternal age was 26.7 ± 5.23 years (S.D=5.23).

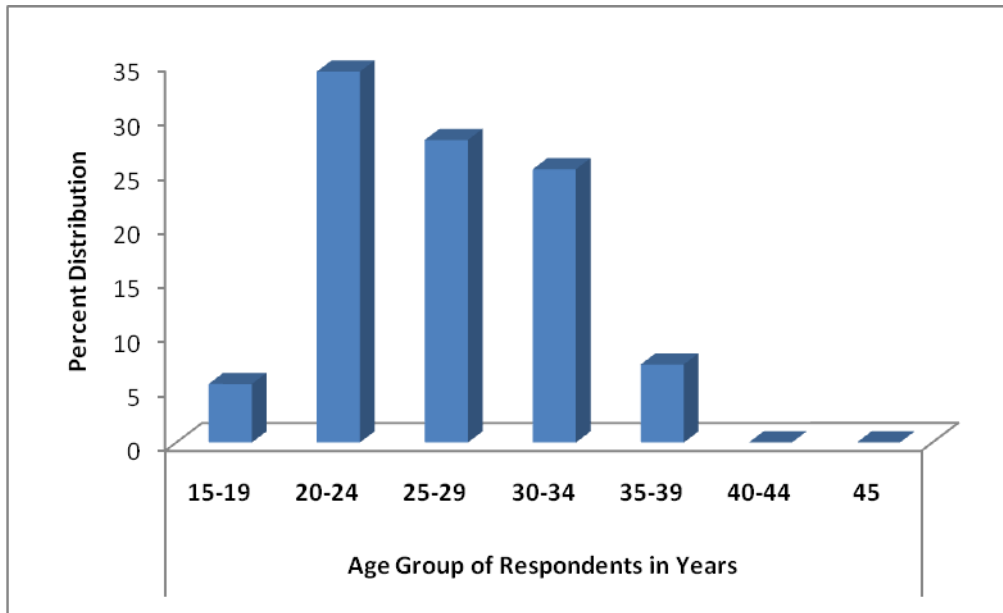


Figure 4.2.1 Distribution of respondents by age

4.2.2 Religion

The findings showed that the highest proportion of respondents were affiliated to protestants faith (40.5%) followed by S.D.A (38.7%), catholic (18%) and others category (2.7%).

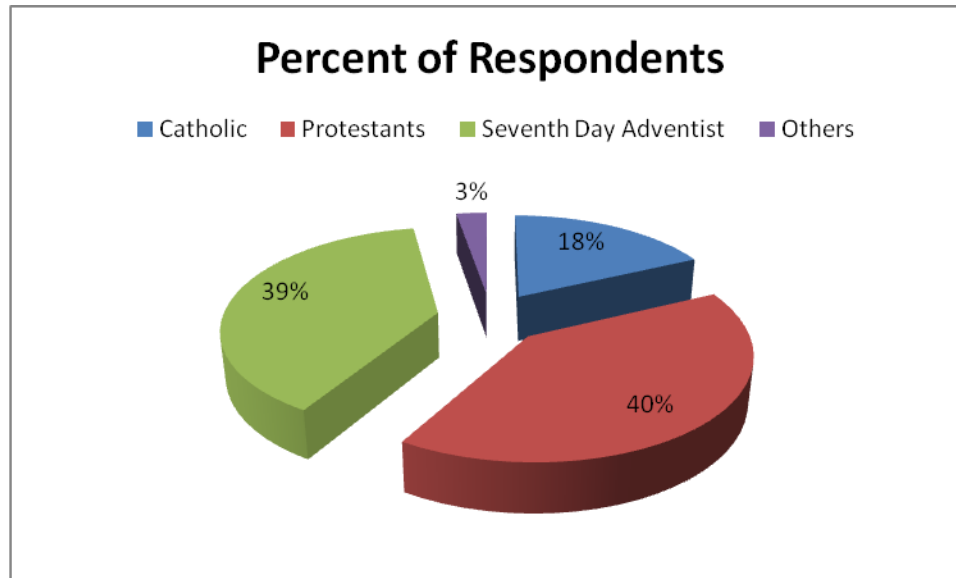


Figure 4.2.2 Religious affiliations of respondents

4.2.3 Marital status

The study revealed that more than half (56.8%) of the respondents were single while 21.6% were in monogamous marriage relationships. The rest were either separated/divorced or in polygamous marriage relationships. Single mothers were frequent within the age group 20-24 years (21.6%). The average household size in monogamous, polygamous and separated marriage relationship was 5.1 ± 1.3 (95% CI=2.6 - 7.7).

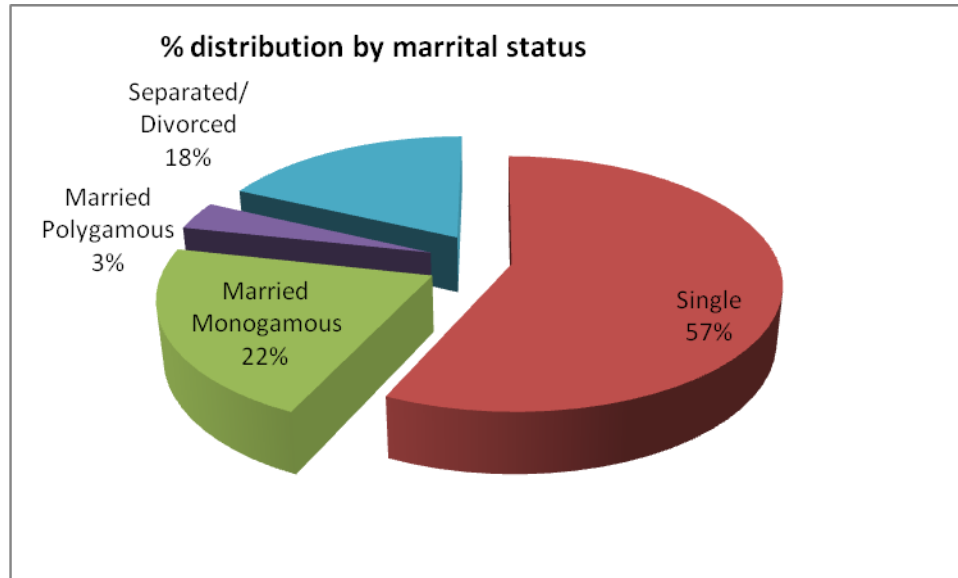


Figure 4.2.3 Distribution of respondents by marital status

4.2.4 Formal education

In this study 97 (87.4%) of respondents attained primary level education while 10 (9.9%) had secondary level of education. This revealed that about 1 in every 10 respondents involved in the study had secondary education. Those who had attained college/university education were 13 (1.8%).

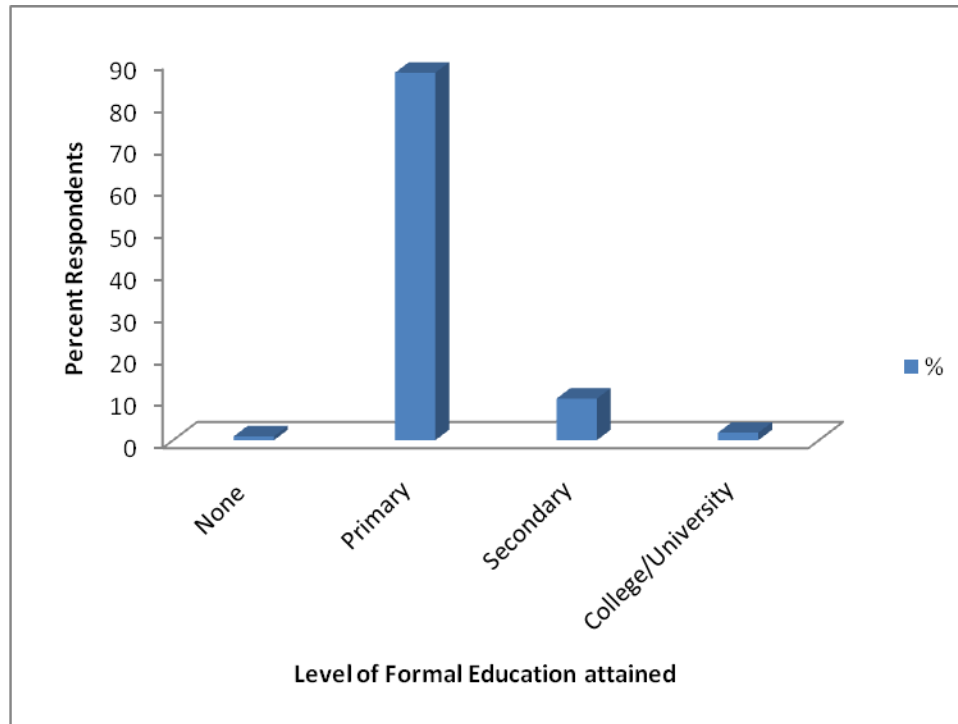


Figure 4.2 4 Level of formal education attained by respondents

Discussion of results

Age, marital status, religion and education status are socio demographic characteristics which can influence individuals' values, knowledge, attitudes, behaviour and practices. In separate studies by Campbell et al., (2002) and Eaton et al., (2003) age was elucidated as a factor influencing maternal choice of infant feeding. It was noted that young mothers lacked experience on infant feeding and mostly relied on elderly women for advice. The same studies pointed out that young women readily denied their sero-status HIV compared with the elderly women. During focus group discussions with elderly women,

family influence on infant feeding was evident. A study by Oguta et al., (2001) notes that level of formal education attained influence behaviour, knowledge, attitude and practice.

The results in this section confirm documented evidence around HIV pandemic that youths are most affected by HIV. The results presented in this section indicate that most respondents were in age cluster of 20-24 years. The respondents in the same age category were single mothers and attained the lowest level of education (primary school) meaning that they were not formally employed. The single mothers could have been an indication of engagement in pre-marital sex and succumbing to HIV. This confirms research findings in the subsequent section which revealed that majority respondents were low income earners who earned a living through small business and manual labour. This had a bearing on their ability to provide adequate and appropriate child feeding and care practices especially in the context of HIV.

4. 3 LEVEL OF MATERNAL KNOWLEDGE ON MTCT OF HIV

The respondents' knowledge on HIV, timing of transmission from mother to the child and prevention of transmission were analyzed. The findings were triangulated with qualitative information received from key informants and focus group discussions. Respondents gave comparisons and similarities of *chiraa* (meaning a curse in Luo community) and HIV as indicated in the table below.

	AIDS	Chiraa
	Has no cure and ultimately leads to death.	Can be cured by herbs administered to an individual to cleanse the social evil committed.
2	Is associated with multiple opportunistic infections such as skin rashes, TB, diarrhea and weight loss.	Usually has one symptom characterized by gradual weight loss.
3	Widely transmitted through sexual intercourse	Results from deviance to social norms
4	Prevalent among sexually active people	Knows no age. Even children can get chiraa for social evil committed by their parents.

Table 4.3 Perceptions on AIDS and chiraa

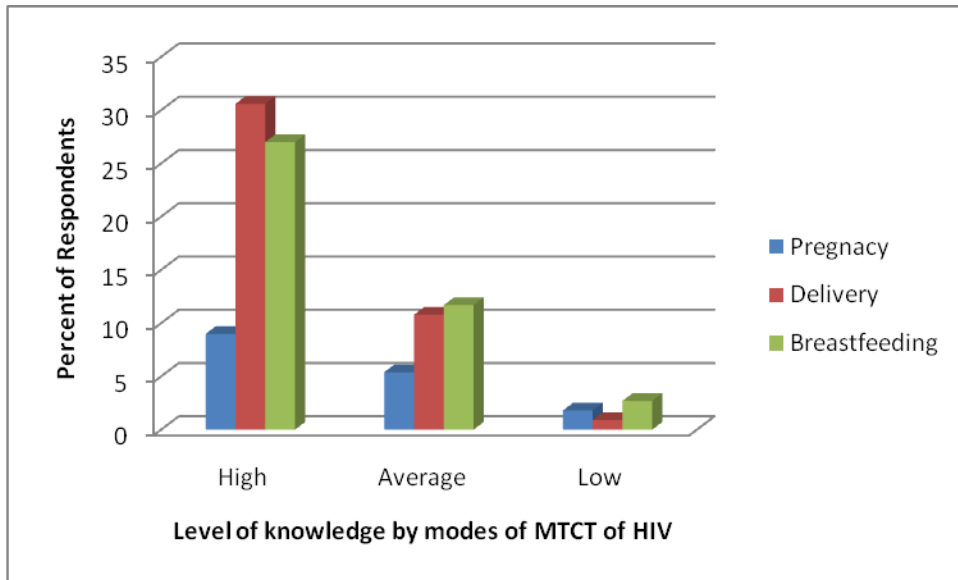


Figure 4.3.1 Level of knowledge on timing of MTCT of HIV

This study scored the level of knowledge among respondents on a three scale rating with one being the lowest, two as average and three as highest. Rating of knowledge was based on respondents level of understanding on general facts about HIV, whether a child can get HIV, timing and of transmission and prevention of HIV from mother to child that's during pregnancy, delivery and breast feeding. Findings of this study revealed that the respondents' level of knowledge on timing of MTCT of HIV varied. A total of 47 (42.3%) respondents knew that HIV could be transmitted from mother to child during delivery, 46 (41.5%) during breast feeding and 18 (16.2%) in pregnancy period. Analysis on prevention of MTCT of HIV revealed that 95% of the respondents knew that it was possible. Cross analysis on cure revealed that about 68.5% of the respondents knew that HIV/AIDS kills and has no cure while 28.8% said it could be cured and 2.7% did not know.

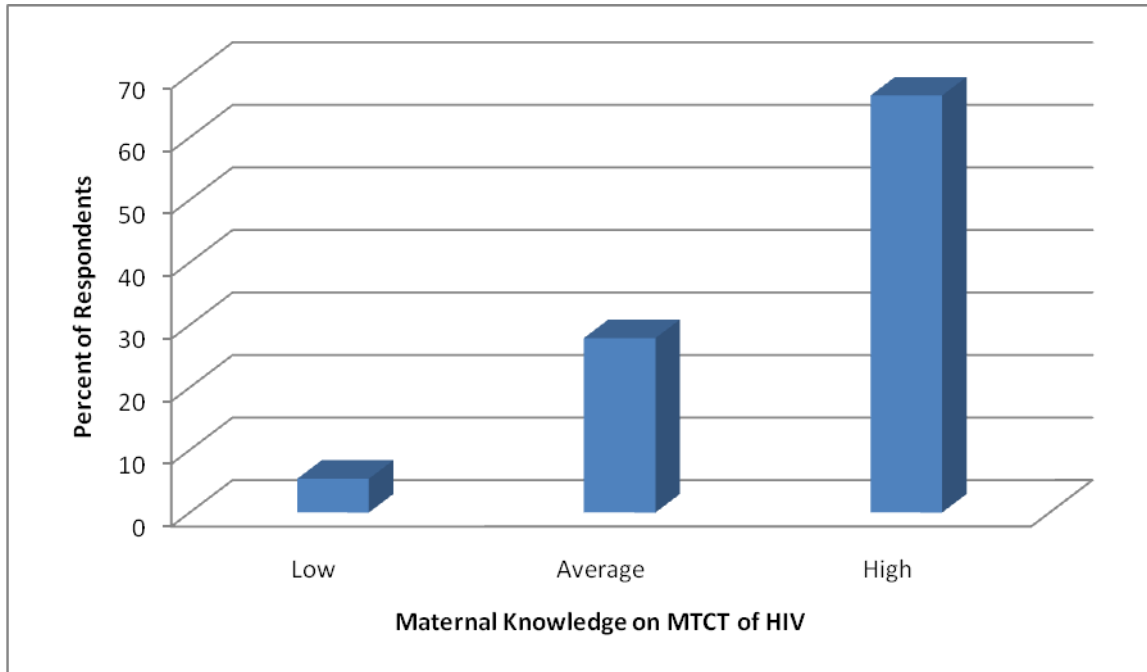


Figure 4.3.2 Level maternal knowledge on MTCT of HIV

Findings revealed that 66.7% of the respondents had high level of knowledge while 5.4% had low level of knowledge. The bivariate analysis using Chi-square showed no association between the level of maternal knowledge ($P=0.09$) and choice of infant feeding practice ($P=0.05$, 95% CI). Similarly, the level of education attained and respondents' knowledge on MTCT of HIV was not statistically associated. Analysis of respondents' exposure to information received in different modes and sources such as health education, counseling and information education & communication materials (IEC) ($P=0.06$) was also not associated with choice of infant feeding practice.

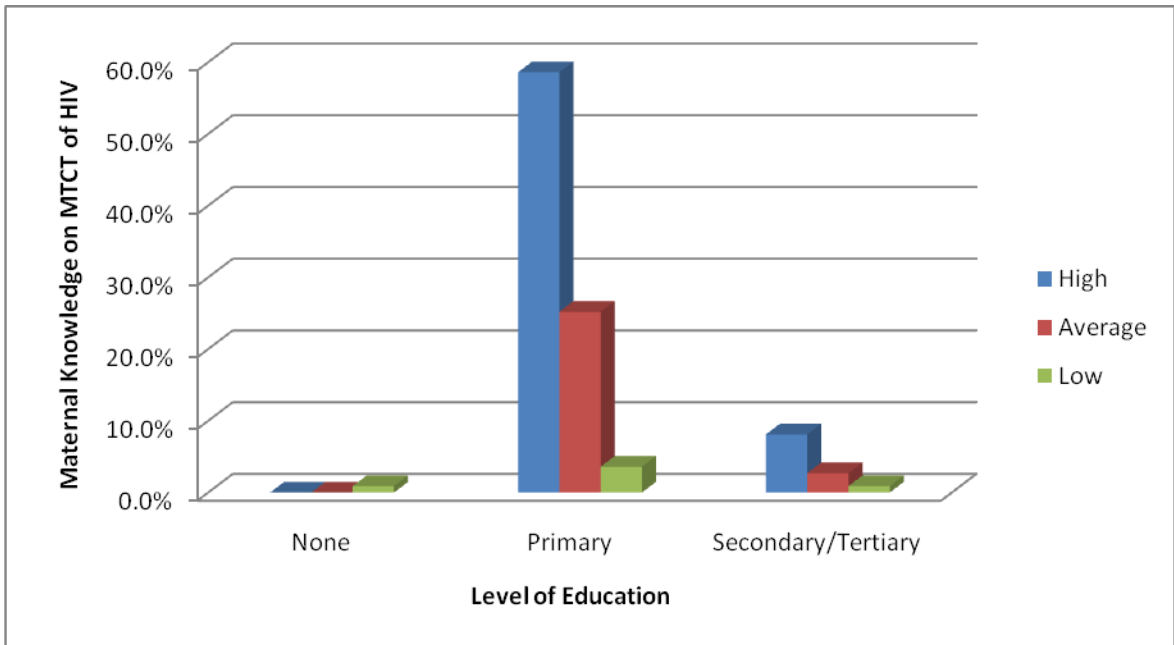


Figure 4.3.3 Maternal knowledge on MTCT of HIV and respondents' level of formal education.

Discussion of results

Studies to assess infant feeding by mothers infected with HIV have been done in some countries but largely unpublished. Findings have been used to inform program development at local and national levels. This section discussed the findings of this study and compared the results with the findings from studies done earlier.

In children, 90% of HIV transmission is as result of mother to child-to-child transmission. This occurs during pregnancy, delivery or breastfeeding (Preble and Piwoz, 1998). A child stands 20% risk of vertical transmission of HIV during third trimester of pregnancy and at birth. Additional 15% risk of transmission occurs through breast

feeding (UNICEF, 1998). Results of this study revealed that 16.2% of the respondents knew that HIV could be transmitted from mother to child in pregnancy, 42.3% during delivery and 41.5% during breast feeding.

This implied that all respondents knew that MTCT of HIV is largely through vertical transmission. Awareness on HIV and AIDS in the district is high (99.8%), however, the level of knowledge on MTCT of HIV has not been widely documented (KDHS, 2009). Results in this study indicate that 68.5% of respondents were aware of HIV and knew that it kills while 95% knew that this can be prevented. Knowledge on MTCT of HIV was high 66.7%. A study by Oguta et al., (2001) in Homa Bay Western Kenya reported low knowledge on MTCT of HIV. On the contrary, the level of maternal knowledge on MTCT of HIV had no significant effect on infant feeding practices. The results point out that breast feeding is deep rooted and most preferred in the rural setting. This applies across to all people regardless of knowledge on their sero-status. UNAIDS (2008) documented that mixed feeding is not recommended since it increases risk of HIV transmission through breast feeding. Results of this study revealed that respondents practiced mixed feeding even after receiving counseling and health talk at health facility. Some fears lied in not breast feeding despite the high level of knowledge. Despite the high level of maternal knowledge, appropriate and recommended infant feeding still remain a challenge. Risky infant feeding practices, that is mixed feeding, was practiced by the respondents. This was attributed to other social and economic factors related to inadequate breast milk let down, cultural orientation around mixed feeding, family influence, engagement in income generating opportunities which kept them away from

home and babies. This increased chances of vertical transmission among infants less than 6 months old.

A study done in South Africa suggested that combination of breastfeeding and artificial feeding has even more potential harm to infants in the first months of life (Coutsoudis *et al.*, 1999) and that those who are exclusively breastfed, for 6 months, may face a significantly lower risk than was previously thought (WHO, 2010).. The study suggested that feeding other solids or fluids in addition to mother's milk in the first months of life may injure the baby's gut and allows the HIV to enter the body tissues. Transmission was lower in exclusively breastfed infants because it maintains a healthy gut epithelium, which acts as a viral barrier, and that breast milk contains immune factors which have anti-viral and anti-HIV effects in vitro (Wahl *et al.*, 1997). One of the major challenges facing women in adopting and adhering to the current recommendations is in access to good quality information (Chopra *et al.*, 2005). Research shows that many counselors are not adequately informed on how to protect infants from HIV transmission and majority are not aware of the existence of the updated guidelines (Koniz, 2004 and Paoli, 2002). Few have received sufficient training on counseling in the context of HIV (Koniz, 2004) and PMTCT programmes in general lack counseling tools and other resources (Swartzendruber, 2002). Staff shortages and associated lack of time to counsel properly, even for those adequately trained in infant feeding counseling are further barriers to the provision of informed infant feeding choices (Ehrnst, 2005).

4.4 INFANT FEEDING PRACTICES

This study investigated infant feeding practices especially among HIV positive mothers in the study community. The common infant feeding practices reported by other studies included breast feeding, replacement feeding and mixed feeding. Findings of this study noted that replacement feeding was not practiced as infant feeding option by HIV positive mothers in Rongo district. However, breast feeding and mixed feeding were reported as common feeding practices.

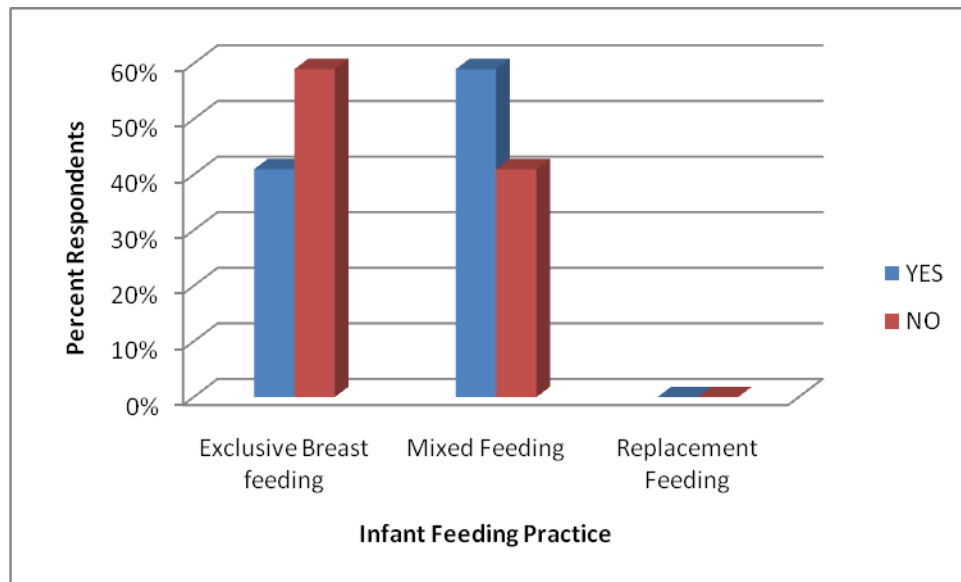


Figure 4.4.1 Infant feeding practices

4.4.1 Breast feeding

The study investigated acceptability of breast feeding and the extent to which HIV positive mothers practiced key recommendations provided by World Health Organization

and UNICEF in 2010. This included timing on initiation of first breast milk to infant, frequency of breast feeding and feasibility of exclusive breast feeding for the first 6 months of infant's life and continued breast feeding for at least 12 months. Findings of bivariate chi-square analysis showed how level of acceptability ($P=0.05$) of breast feeding as an infant practice among respondents. The reasons provided were that breast milk has nutritional value, provides immunity, readily availability, social-culturally viable and economically feasible. It was also found out that 72 (64.5%) of the respondents involved in the study had ever breast fed their infants. A small number (5.5%) initiated infants to breast milk within one hour after birth. Frequency of breast feeding varied with respondents. A total of 62 (55.6%) reported having breastfed their infants on demand while, 11.1 % breastfed 4 times or less and 33.3% breastfed at least 5 times a day. In regard to exclusive breast feeding (EBF) for the first 6 months of infant's life, 37 (40.6%) fully practiced EBF. This is indicative that complimentary foods were introduced early than WHO & UNICEF (2010) recommended period. Among respondents interviewed to determine the period taken for continued breast feeding children 6-12 months, (92.7%) reported having previously breast fed their infants for less than 12 months while only 7.3% breast fed for at least 12 months. Summary of results are indicated in the table below;

Feeding practice	Percent of total HIV positive women (N=111)
Ever breastfed (Any breast feeding) (N=111)	64.5%
Exclusive breast feeding for 6 months (N=90)	40.6%
Initiation of breast feeding: <i>within 1 hr of birth</i>	5.5%
<i>within 24 hrs of birth</i>	1.8%
Frequency of breast feeding < less than 6 months (N=111)	
<i>On demand</i>	55.6 %
<i>4 times or less</i>	11.1%
<i>> 5 times</i>	33.3 %
Duration of breast feeding (N=111): <i>< 12 months</i>	92.7%
<i>>12 months</i>	7.3%
Age complementary food introduced (N=73): <i>1-3 months</i>	31.5%
<i>4-6 months</i>	63.1%
<i>> 6 months</i>	5.4%

Table 4.4.1 Feeding practices in the study area

The study also investigated whether mothers in the study area could opt to use modified forms of breast milk such as wet nursing and expressed heat treated breast milk. Bivariate analysis using Chi-square indicated that wet nursing (P=0.08) and expressed heat treated breast feeding (P=0.06) are statistically not a preferred infant feeding options. Wet

nursing was particularly rejected by respondents (88.3%) citing the chances of HIV infection by untested surrogate mother.

4.4.2 Mixed feeding

The study assessed to establish whether mothers in the study area practiced mixed feeding for infants, the age at which other foods are introduced, types of foods feed to infants, awareness of associated dangers, existence and extent of adherence to the recommended of guidelines. The results indicated that 59% (N=111) of the respondents in the study area practiced mixed feeding (P=0.05). Breast feeding was done in combination with other foods and fluids. The foods commonly fed to infants alongside breast milk included among others porridge, animal milk and mashed foods. Respondents (63.1%) introduced such foods to infants at the age of 4-6 months of infant's life. Reasons behind practicing mixed feeding included among others; insufficient breast milk (85.7%), onset of another pregnancy (4.8%), mothers' engaged in economic or social activities away from home/ child and deliberately accustoming the baby to family foods (4.8%). Analysis of preference of complimentary foods fed to infants noted that 110 (99.1%) respondents first fed infants on animal milk, specifically cow milk. Cow milk was most preferred by respondents since they considered it as safe, nutritious, locally available, relatively affordable and culturally/traditionally acceptable. The respondents (99.1%) were not aware of the negative effects of introducing foods other than breast milk before the infant was 6 months of age.

Complementary feeding practices

WHO (2010) recommends optimal complementary feeding from the sixth month of the child's life. Cross examination with respondents on actual periods of complementary feeding revealed that 70.3% respondents correctly reported the recommended age to introduce complimentary foods. Further analysis on practice revealed that 63.1% (N=73) respondents introduced complementary foods at the age of 4 months, 31.5% at 1-3 months and 5.4% after 6 months. The commonest complementary food was porridge (40%). Triangulation of these findings with those from focus group discussion with women and caregivers cited reasons of early introduction to complementary foods such as early pregnancy, inadequate breast milk, accustoming the child to family food, absence from home due to business/work or commitment on the farm.

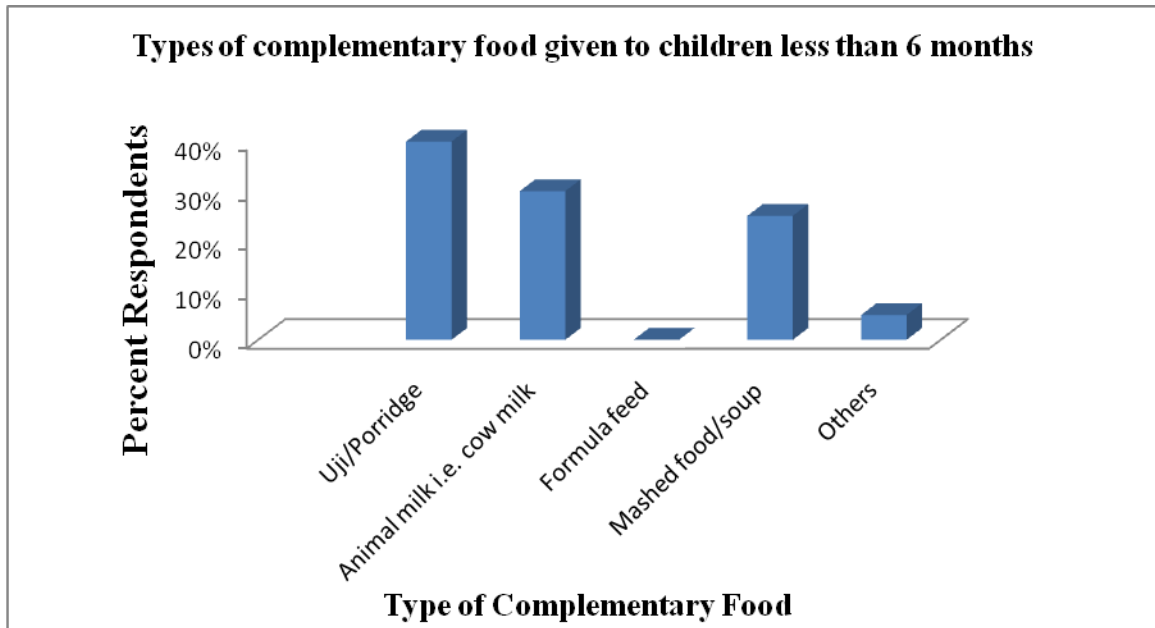


Figure 4.4.2 Types of foods given to infants less than 6 months

4.4.3 Replacement feeding

Replacement feeding practice was investigated in the context of popularity, accessibility, feasibility affordability, safety and sustainability (AFASS) (FANTA, 2004). Respondents in this study indicated that replacement feeding was expensive, not feasible and therefore not sustainable in their low income context. Focus group discussion with mothers indicated that this was accessible by families which had stable or reliable income. Issues around inadequate technical knowhow on preparation, sanitation and hygiene emerged in the study community. Results of Chi-square analysis showed that expect for the cost, commercial formula (P=0.05) was acceptable to respondents as safe and nutritious infant

replacement feeding option in the context of HIV. This method was preferred by 96.4% respondents.

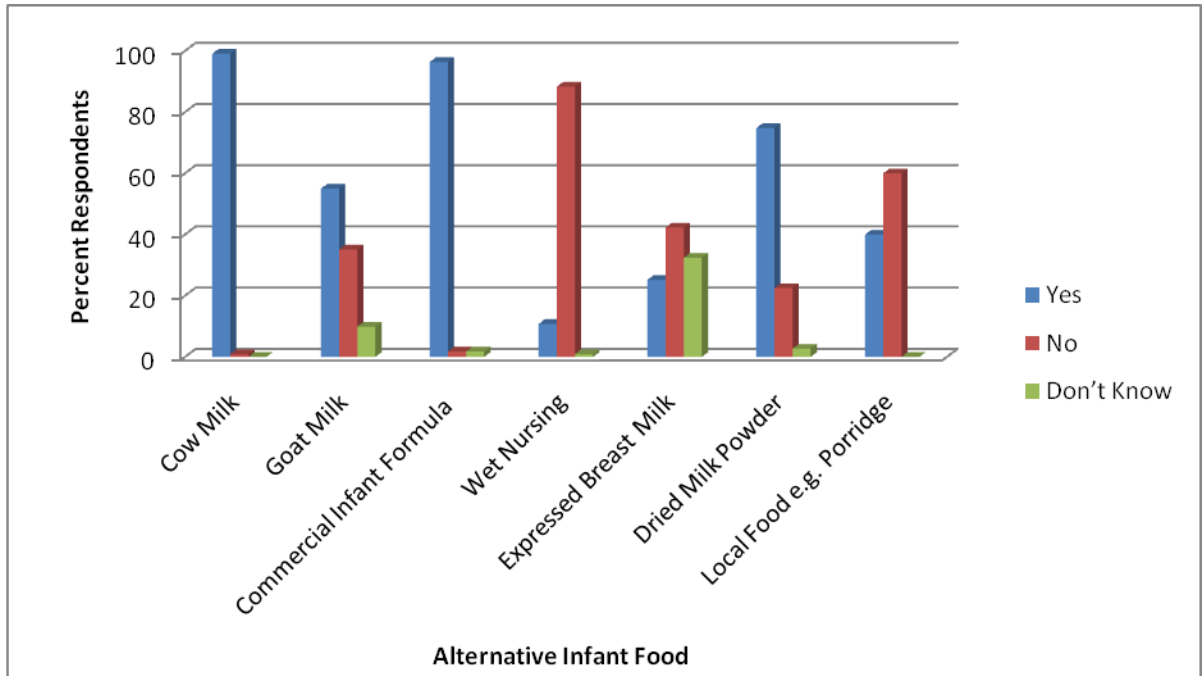


Figure 4.4.3 Infant feeding options

Discussion of results

Infant feeding patterns are determinants of a child’s nutritional status. Poor feeding exposes the child to higher risks of illness, poor growth, development or even death.

Breast feeding is recognized and culturally rooted as the main practice to breast feed an infant. Breast milk is standard and provides all the nutrients an infant needs in early stages of life (UNAIDS, 2008). Respondents in this study indicated that breast feeding was the most acceptable infant feeding practice. This is because of the socio-cultural, economic, immunity and nutritional viabilities related to this practice. Similar results

were found in a study conducted by Oguta et al (2001). In the results it is noted that most mothers initiate breast milk to infants after 1 hour which has a negative effect on mother-infant bonding. Most mothers frequently breast fed infants on demand which is in compliance with UNICEF guidelines (2010) on infant breast feeding. However, the practice on infant exclusive breast feeding for 6 months of life and continued breast feeding for the first twelve months was low. A study by Oguta et al. (2001) and DeKock (2000) got similar also indicated poor practice. According to WHO (2010) guidelines, HIV positive mothers are recommended to practice exclusive breast feeding for 6 months of infant's life and gradually introduce complementary foods while continuing breastfeeding for at least 12 months as long as the mother and or the child are on ARVs treatment. On the basis of these results it is therefore revealed that most mothers do not follow recommended guidelines. Although wet nursing and expressed heat treated breast milk were not popular practices among mothers in the study community, WHO guidelines recommend them as long as the surrogate mother is tested for HIV and is found negative and correct heat treatment of expressed breast milk is observed. However, further study on feasibility home flash heat treatment of expressed breast milk. On the other hand, replacement feeding was not commonly practiced by mothers due to economic constraints. WHO recommends that mothers who choose to practice replacement feeding as should not provide breast milk or other foods to infant for six months. Recommended infant formulas are advised and usually prescribed by nutritionist of qualified health worker. A greater percentage of mothers who participated in the study practiced mixed feeding. This contradicts with WHO and UNICEF guidelines of twenty ten. In summary, it is imperative to sensitize health professionals and recipient mothers

and the dangers of deficient follow up of recommended guidelines in infant feeding. Failure might put children at higher risk of HIV infection through breast milk.

4.5 SOCIO-ECONOMIC FACTORS INFLUENCING INFANT FEEDING PRACTICES

4.5.1 Level of income

Income is a factor that influences purchasing power at household level. This study assessed the level of income among respondents was based on Kenya National Bureau of statistical (KNBS, 2008-2012) wage indicator. KNBS recommend an average wage £6.19 per hour. The respondent's engaged in different income generating activities with 20.7% undertaking business, 3.6% formal employment, 3.6% casual labor, 2.7% artisanship and others (combination of farming & business 1.8%) and house wife (2.7%). A large proportion of the mothers interviewed (68.5%) had low annual income of less than Ksh 12,000. This resonated with absolute poverty level of 46% (Rongo DDP, 2008-2012). Only 4.5% of the respondents had an annual income of above Ksh 60,000. Variations in levels of income exposed mothers to different levels of purchasing power. Results of Chi-square analysis indicated a strong association between level of income ($P=0.05$) and maternal choice of maternal infant feeding practice.

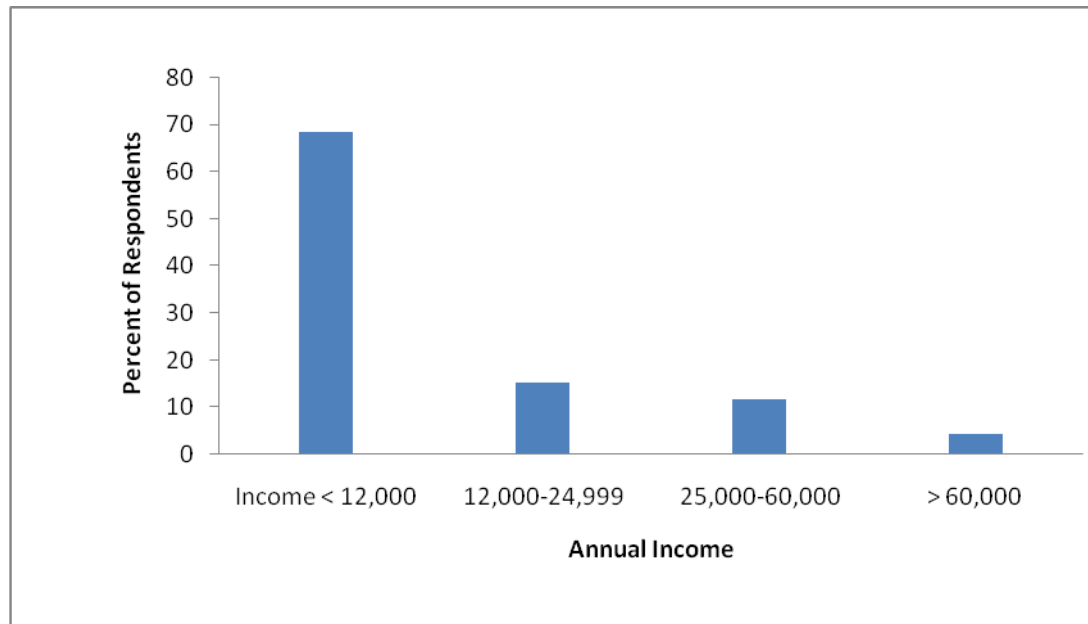


Figure 4.5.1 Respondents distribution of annual income

4.5.2 Culture and norms

In context of infant feeding, culture referred to the way the community fed infants as influenced by factors like knowledge, experience, values, religion, and notions of time. Norms referred to a typical standard, model or pattern of infant feeding guided prevailing rules. Practices referred to customary or habitual way of infant feeding. Chi-square bivariate analysis of results gave a strong association between culture, norms and practices ($P=0.045$) and choice of infant feeding practice. For instance mixed feeding was commonly practiced by majority as a norm and culturally acceptable in most African communities instead of exclusive breastfeeding. Breast feeding was reported as a cultural practice and acceptable in the community regardless of maternal HIV sero status.

4.5.3 Family influence

Practices are sometimes a product of influence from people who live around you (Sebalda, 2006). This study determined the extent which family members contributed to the maternal choice of infant feeding practices. A total of 81% of respondents explained that it was difficult to practice exclusive breastfeeding in social conditions. Chi-square analysis gave evidence of association ($P=0.045$) between the two factors. The evidence was especially strong among young mothers within the age bracket of 20-24 years (34.2%). Principal influencers included mother in law and grandmothers. Mothers in the study believed that breast feeding protects the infant against diseases. The respondents misconceived formula feeding to mixed feeding indicating that a baby who is formula fed always gets sick. Other beliefs were around HIV transmission from mother to child (94.6%) and that HIV has no cure (68.5%).

4.5.4 Food and nutrition security

Food security in this study referred to a household's accessibility to adequate balanced food throughout the year. Food security was assessed in terms of size of land owned in acres, and average annual yield of staple crops as indicated in figures 4.5.4.1 and 4.5.4.2 below respectively. Results indicated that 89% respondents agreed that as adequate household food and nutrition security influenced their choice of infant feeding ($P=0.014$). Most respondents (64.8%) depended on agriculture for livelihood. Majority of respondents are small holder farmers owning less than 1 acre utilized for farming.

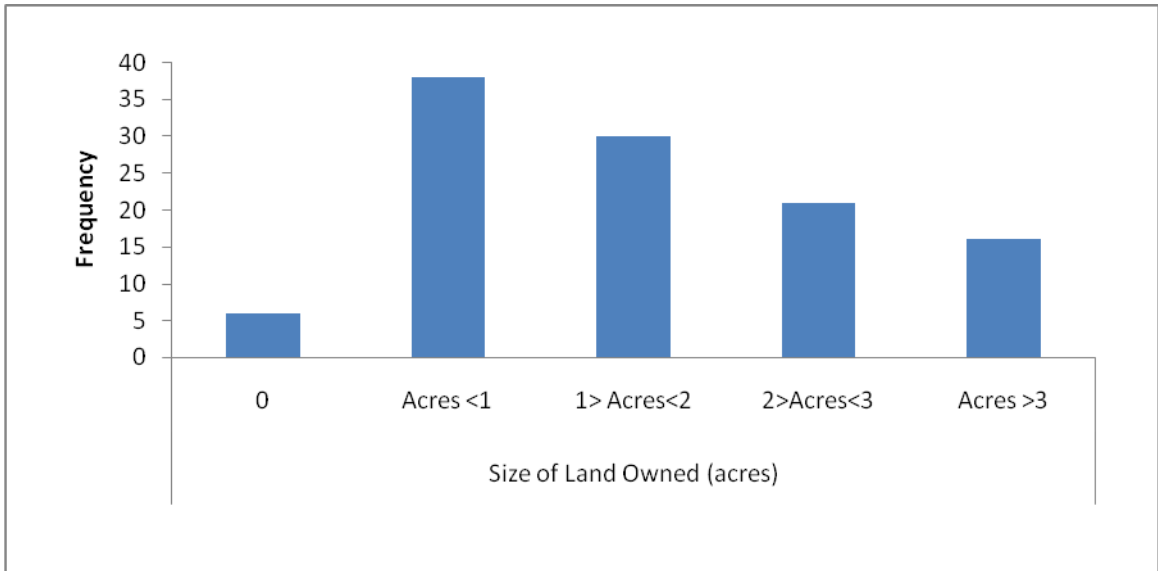


Figure 4.5.4.1 Respondents land ownership

Cereals and vegetables were the main staple food crops. Averagely most respondents reported a yield of more two bags of in a season. Other crops were pulses, root crops, oil crops (nuts), and fruit trees.

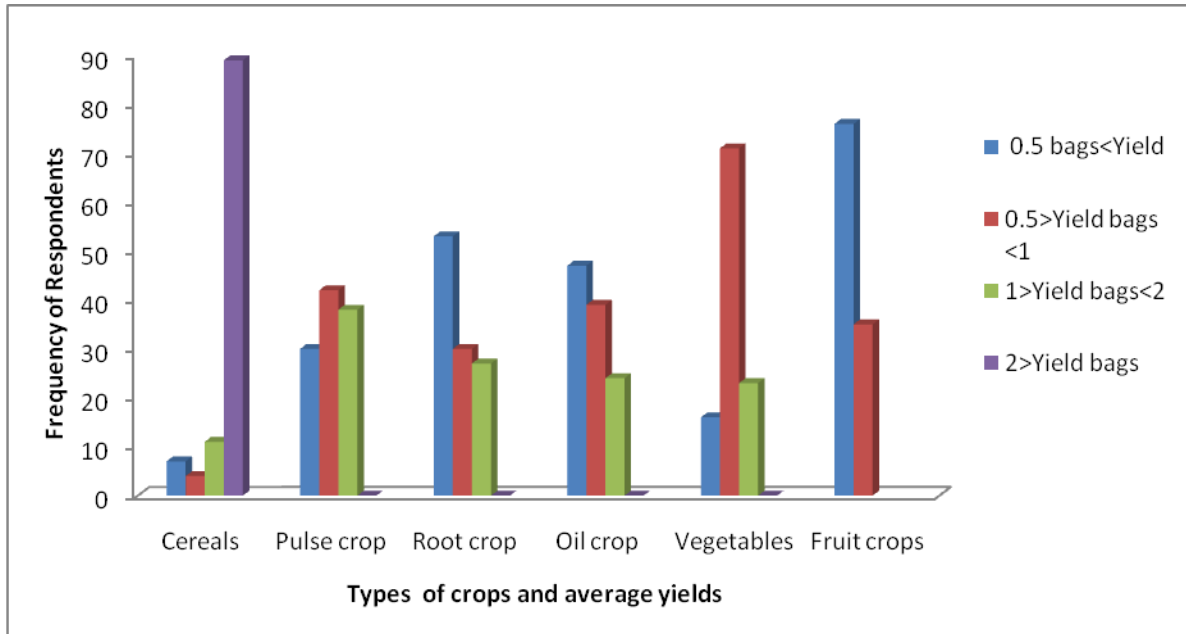


Figure 4.5.4.2 Types of crops grown and average yield in bags per season

4.5.5 Exposure to health information and counseling in the recent past

Most respondents interviewed reported having received health talk or counseling on breastfeeding, infant weaning, breastfeeding alternatives, maternal nutrition, prevention of HIV/STIs including MTCT and home hygiene. Majority received health talk on breast feeding.

Lecture/Topic	Responses (N=110)	
	Yes (%)	No (%)
Breastfeeding	91%	8.1%
Infant weaning/complementary feeding	86.5%	12.6%
Breastfeeding alternatives	84.7%	14.4%
Maternal nutrition	91%	8.1%
Prevention of HIV/STIs including MTCT	91%	7.2%
Hygiene at home	87.4%	11.7%

Table 4.5.5 Exposure to health information and counseling in the recent past

Discussion of Results

Choice of infant feeding is affected by a matrix of socio-economic factors. This study established that the choice of maternal infant feeding practices is affected by the level household income, cultural values, beliefs, norms, familial, peer influence and dynamics of availability and access food and nutrition security. Income is a factorial purchasing power factor by a household. It affects affordability and access to infants' feed. For instance, poor mothers in the study area cited that replacement was not feasible since it very expensive. Studies conducted by Oguta et al (2001), World Health Organization (2006) indicate that women in low resource setting are most affected. Rongo district development plan (2008-2012) reported 46% people living below poverty line. The study confirmed that (68.5%) respondents earn less than Kshs 12,000 annually. This is lower

than the wage indicator of 4.9 dollars per hour by Kenya National Bureau of Statistics (KNBS, 2010).

The mothers in the study were influenced by beliefs and misconceptions on aspects of HIV transmission from mother to child ($P=0.05$, 94.6%) and cure of HIV ($P=0.03$, 68.5%). Mothers knew that breast feeding protects the infant against diseases. Often the value of breastfeeding is misconceived to formula as in the following statement: ‘the baby who is formula fed always gets sick’. The strength of the belief in the superiority of breast milk over formula is so great and therefore may influence maternal choice on infant feeding option. A study conducted by Thairu (2000) reported similar findings.

Family members, especially grandmother, mother in-law and men play key role to influence maternal decision on choice of infant feeding practice ($P=0.045$). Elderly and experienced mothers advocate for mixed feeding to young mothers (Bentley *et.al*, 1999). The respondents (81%) reported that it was difficult to practice exclusive breastfeeding in prevailing social conditions. Most mothers did not disclose their status to family members. The family members therefore did not understand the value of exclusive breast feeding or replacement feeding especially in situations where the mother was HIV positive. Young mothers were inexperienced and insecure about their own beliefs. They frequently received advice from their families especially grandmothers to practice mixed feeding which conflicted with advice from health care providers. Families insisted on their own decisions or, less frequently, implemented their preferred feeding practices without the mother’s consent. Accommodating the family’s wishes was an adaptive

coping strategy as adolescent mothers struggle with the enormous challenge of parenting in the midst of their own development.

Food and nutrition security ($P=0.014$) influenced greatly influence maternal choice of infant feeding practice. In the study, mothers tended to feed infants on what was available referred to as 'family food'. Most respondents (64.8%) depended on agriculture as small holder farmers owning less than 1 acre for food production. This is a source of food as well as source of income. In the study respondents who did not have land were generally food insecure. This meant that they had to purchase food for the infant and the family. Due to such constraints, respondents reported that infants are introduced to family foods as early as 3 months.

Cereals and vegetables were the main staple food crops. Averagely most respondents reported a yield of more two bags of in a season. Other crops were pulses, root crops, oil crops (nuts), and fruit trees.

Infant feeding practice was associated with cultural norms and practices ($P=0.045$) observed by the respondents. Mixed feeding was commonly practiced by majority since it was culturally acceptable in most African communities instead of exclusive breastfeeding (Bland et al., 2002). This was also influenced by maternal preferences, skills and home circumstances. Customarily, the baby was put to the breast within a short time after delivery, and during the subsequent weeks the breast was used as a comforter/pacifier even when the infant was predominantly replacement fed.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter covers a brief summary of results, conclusion and recommendations. The section of conclusion provides a summary of the findings based on the on the study objectives and hypothesis. The recommendations give the way forward on areas of further research.

5.2 CONCLUSIONS

1. Infant feeding is critical in early life and key determinant to child survival and development. This is more challenging in context of HIV due to vertical transmission from mother to child. It was concluded that mothers in Rongo have high knowledge MTCT of HIV. However, there was general poor adherence to WHO (2010) guidelines. There is need to sensitize communities to adhere to infant feeding guidelines and ART treatment regimes in context of HIV to prevent mother to child infection. In conclusion, the null hypothesis stating that the choice of maternal infant feeding practices is not influenced by the level of maternal knowledge is accepted.
2. Mixed feeding was the most infant feeding practice during the first six months of life. The infants are breastfed and at the same time introduced to foods such as porridge and cow milk. Engagements in economic ventures, early onset of

pregnancy, and acquaintance to family foods are among reasons why most mothers practiced mixed feeding. Poor adherence by mothers to recommendations provided by World Health Organization (2010) was noted. Mixed feeding could therefore pose greater risk and precipitator to mother to child transmission of HIV.

3. The choice of maternal infant feeding practices was to a greater degree influenced by internal and external social and economic factors within the mothers living environment. These factors included level of household income, food & nutrition security, family influence, culture, norms and beliefs. Therefore, this study rejected the null hypothesis stating that the choice of infant feeding practices among HIV positive postpartum mothers is not associated with socio-economic factors in the study community.

5.3 RECOMMENDATIONS

1. Conduct further research on adherence to MTCT guidelines on infant feeding and care at household level.
2. Strengthen MTCT support systems beyond care at health facility level to enhance maternal knowledge and practice.

3. Mixed feeding to infants before six months increases risk of MTCT of HIV. Therefore there is need to intervene through health education, counseling and sensitization to health workers and mothers on the importance of adherence to WHO recommended guidelines.
4. Intensify sensitization on vertical transmission of HIV and associated risks to mothers attending MCH services in the health facilities. Health care providers need to intensify health and nutrition education, voluntary and confidential counseling and testing.
5. Target community with behavior change programmes to address negative social factors that the research has revealed contributes MTCT of HIV among HIV positive mothers.
6. This study recommends further research on assessment of maternal adherence to WHO infant feeding guidelines in context of HIV.

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2.0: QUESTIONNAIRE

ASSESSMENT OF FACTORS INFLUENCING ALTERNATIVE INFANT FEEDING PRACTICES AMONG HIV POSITIVE MOTHERS IN RONGO DISTRICT, WESTERN KENYA.

Administered to women with known HIV status and have children less than 12 months

Consent Information:

This research is being undertaken with express authority from Kenyatta University, NCST and Ministry of Health (Kenya). For the success of this project, it is important to gather information from the community in Rongo. Such information is important for planning future interventions to reduce the rate of mother-to-child transmission of HIV through breast-feeding. The findings will be used to make recommendations on how best the community of Rongo can be equipped with information for prevention of MTCT of HIV through breast milk based on available guidelines. We would like to request you to participate in this survey. The information collected will be confidential and will not be used in any other context other than planning for future interventions beneficial to Rongo community. The session may take about 30 minutes. Your consent to participate is voluntary.

Instructions

The questionnaire is set up in six (6) sections. Please answer all questions in all the sections by ticking/writing the response you find most appropriate in the box provided. Each section has its own set of instructions. Please follow these carefully.

Date of Interview (*dd/mm/yr*): -----Time of Interview: -----

Name of Enumerator: ----- Signature: -----

SECTION A: SOCIO-DEMOGRAPHIC FACTORS

SDF001. Location	
SDF002. Sub Loc	
SDF003. Village	
SDF004. Household Number	
SDF005. Household Size	

SDF006. Sex of Household head

(Male =1, Female =2)

SDF007. Age of respondent (yrs)

SDF008. Sex of respondent

(Male=1, Female=2)

Information about the mother

SDF009. Age in years

(1=15-19, 2=20-24, 3=25-29, 4=30-34, 5=35-39, 6=40-44, 7= Over 45)

SDF010. Marital status

(1=Married Monogamous, 2= Married/Polygamous, 3=Single, 4=Separated/Divorced,

SDF011. Level of Education

(1=None, 2=Primary, 3=Secondary/Tertiary)

SDF012. Religion

(1=Catholic, 2=Protestants, 3=SDA, 4=Others)

SDF013. Child's Sex

(1=Male, 2=Female)

SDF014 Age (months)

(1=Less than 6 months, 2=6-12 months)

SDF015. What's the family's source of income?

(1=Casual, 2=Farming, 3=Business, 4=Employed, 5=Others)

SDF016. Estimate your annual income from the various sources

(1=Income below poverty line < KSh.12 000, 2=Average income >KSh. 12 000 <24 999
3=Sufficient income >KSh. 25, 000)

B: FOOD SECURITY

FS01. Where do you get your first and second staple foods from for more than 6 months per year?

	1.My farm	2.Buy	3.Beg	4. Food aid	5. Relatives / well wishers	6. Other (Specify)
FS01-1. First Staple food						
FS01-2. Second staple						

FS02: Land ownership and use: State how much land your household has / uses for each of the following: (If none, go to FS08)

	Land ownership and use LAND UNDER	1. None	2. Less than 1 acre	3. 1 to less than 2 acre	4. More than 2
FS02-1	Land owned by household				
FS02-2	Land leased by household				
FS02-3	Cash crop (tobacco, sugarcane,)				
FS02-4	Cereal (maize, sorghum)				
FS02-5	Pulse crop (beans, peas, green grams)				
FS02-6	Root crop (sweet potato, cassava, yams)				
FS02-7	Oil crop (groundnut, simsim)				
FS02-8	Vegetable crops(kales, cabbage, tomatoes,				
FS02-9	Fruit crops(mangoes, citrus, pawpaw				
FS02-10	Grazing livestock				
FS02-11	Fodder / pasture for livestock feed				
FS02-12	Fallow land in rotation / uncultivated				
FS02-13	Trees / woodlot (non-edible)				
FS02-14	Homestead				

FS03: How much produce / yield did your HH get for each food crop category during the last one year? (If None, go to FS07)

Question	Name of staple crop	1. None	2. Less than 0.5 bags	3. 0.5 to less than 1 bag	4. 1 to less than 2 bags	5. More than 2 bags
FS03-1	Cereal (maize, millet, sorghum)					
FS03-2	Pulse crop (beans, peas)					
FS03-3	Root crop (sweet potato, cassava)					
FS03-4	Oil crop (groundnut, simsim)					
FS03-5	Vegetable crops					
FS03-6	Fruit crops					
FS03-7	Fodder					

FS04: How much produce / yield did your HH get for each cash crop during the last one year?

Question	Name of cash crop	1. None	2. Less than 0.5 tons	3. 0.5-less than 1 tons	4. 1-less than 2 tons	5. More than 3 tons
FS04-1	Sugarcane					
FS04-2	Cotton					
FS04-3	Coffee					
FS04-4	Bananas					
FS04-5	Other (Specify)					

FS05. Does your crop produce last to the next harvest season?

(1=Yes 2=No).

FS06. [If No in question FS05], what is the main reason?

(1=Rainfall failure, 2=Pests attack, 3=Poor Soil, 4=little land, 5=Hailstones/Floods
6=Insufficient labour force, 7=Weeds

Other, specify _____)

FS07. If No in question FS05, how do you obtain food before the next harvest?

(1=Government provision, 2=NGO food/ charity e.g. church/mosque, 3= Casual work,
4=Remittances (from relatives and children) 5=Purchasing, 6=Grow drought-resistant
crops)

FS08. Who makes decisions about day to day food use in this household?

(1=Husband, 2=Wife, 3=Both, 4=Mother-in-law)

Other, specify _____)

FS09. Who decides when to use stored food?

(1= Husband, 2= Wife, 3=Both, 4=Mother-in-law, 5=Co-wife,

Other, specify _____)

FS010. What is your major source of fuel for food preparation?

(1=Gas 2=Electricity 3=Fire wood 4=Charcoal 5=Paraffin)

FS011. How affordable is this source of fuel in your opinion?

(1=Cheap 2=Expensive 3=Moderate/Affordable)

FS012. How far (distance) is the nearest market where you buy most of your foods?

FS012-1. Kilometers

FS012-2. Minutes

(1=Less than 1km, 2= More than 1 km, 1=Less than 30 min, 2= More than 30 min)

FS013. What type and how many of these animals/livestock do you have?

Livestock	Number
FS013-1. Cattle (dairy)	
FS013-2. Goats	
FS013-3. Chicken	

FS014. Who owns the livestock?

(1=Family, 2=Husband, 3=Wife, 4=Father-in-law,

Other, specify _____)

FS015. How much milk per day do you get from your animals (Cows/Goats)?

(1=None, 2=0.5-1 litres, 3=1.5-2 litres, 4= 2-5 litres, 5=More than 5 litres)

FS016. Is the milk adequate?

(1=Yes 2=No 3 N/A)

FS017. If No in question FS016, how do you supplement the shortage? (If **YES** skip to question FB01).

(1=Buy, 2=Support by relatives/friends/Neighbors, 3=Nothing)

SECTION C: BREASTFEEDING

BF01. Is the infant breastfed?

(1=Yes 2=No)

BF02. If yes, how often per day (24 hours)?

(1=On demand, 2=Every 3 hours, 3=4 times or less 4=5-7 times 5=at least 8 times)

BF03. Do you breastfeed during the night?

(1=Yes 2=No)

BF05. Does the child take any other fluids or foods? (If below 6 months of age)

1=Yes, 2=No (If No, or if Child is above 6 months, Skip to No. 2900)

BF06. If yes, which one(s)?

(1=Warm water 2=Uji 3=Animal Milk 4=Formula feed 5=Mashed food/soup 6=Grip water 7=Concoction 8=Glucose solution 9=Fruit/juice Other, specify

_____)

BF07. And if **YES** in 2600, why?

(1= perceived insufficient milk 2= Onset of another pregnancy 3=Being away from the child 4= Accustom the baby early to other foods) Other, specify _____)

BF08. After how long did you introduce the child to breast milk on delivery?

(1= within the first hour 2=2-6 hours 3=7-24 hours 4=After 24 hours 5=Don't know)

BF09. How often do you stay together (in the same room) with your newborn baby?

(1=All the time 2= Most of the time 3= Only when breastfeeding 4= Least of the Time/Rarely _____)

(If child is first born, skip to No. 3300)

BF010. At what age do you discontinue breastfeeding your child?
(1=Less than 1 month 2=1-3 months 3=4-6 months 4=7 – 11 months 5=1-2 years 6=
For more than 2 years)

BF011. How do (did) you discontinue the child from breastfeeding?
(1= Bettering the breast 2=Staying away 3= Persistent withholding 4=Self refusal by
child 5=Onset of another pregnancy or baby. Other specify_____)

SECTION D: COMPLEMENTARY/ALTERNATIVE INFANT FEEDING

CAF001. At what age do (did) you introduce other foods to the baby?
(1=At birth 2=1-3 months 3=4-6 months 4=After 6 months)

CAF002. At what age do you feel these complementary feeds should be introduced?
(1=Below 1 month 2=1-3 months 3=4-6 months 4=6 months-1 year 5=1-2 years 6=After
2 years).

CAF003. What did the child eat yesterday? (The interviewer should note if anything other
than breast milk was given except vitamin drops and medicine. If the child was not given
anything else, skip to No. MK001)
(1=Water 2=milk, 3=Cerelac, 4=Ugali/fluidy vegetables, 7=Porridge, 8=Fruit/Juice
9=Cooked mashed food, 10=Soup)

CAF004. How many times was the child fed (in the last 24 hours)?
(1=1-3 times, 2=4-7 times, 3=More than 8 times)

CAF005. How do you obtain the main complementary food?

(1=Own produce 2=Bought 3=Donation 4=Some bought/produced)

CAF006. Does the child's feeding change during illness?

(1=Yes, 2=No)

CAF009. If **YES** in Question CAF006, how? (If **NO** skip to question CAF011)

(1=Eats less, 2=Eats more, 3=Discriminates food, 4=Only breastfeeds)

CAF010. Do you encourage the child to eat during or after illness?

(1=Yes, 2=No)

CAF011. What do you use to feed the child?

(1=Cup/mug, 2=Spoon, 3=Bottle, 4=Calabash, 5=Glass, 6=Dish/bowl, 7=Other, specify_____)

SECTION E: MATERNAL KNOWLEDGE ON MTCT OF HIV

MK001. Can children have HIV/AIDS?

(1=Yes, 2=No, 3=Don't know)

MK002. Can HIV positive mother transmit the virus to the baby?

(1=Yes, 2=No, 3=Don't know)

MK003. Do you think that HIV can be transmitted from mother- to- child;

MK003- 01. During pregnancy?

(1=Yes, 2=No, 3=Don't know)

MK003-02. During delivery?

(1=Yes, 2=No, 3=Don't know)

MK003-03. Through breastfeeding?

(1=Yes, 2=No, 3=Don't know)

MK004. Is mother- to- child transmission of HIV preventable?

(1=Yes, 2=No, 3=Don't know)

MK005. Is there any cure for HIV/AIDS?

(1=Yes, 2=No, 3=Don't know)

MK006. If by bad luck, a mother of an infant dies, is too ill or is incapacitated in a way
not able to feed the baby, how is such a child fed?

(1=Surrogate breastfeeding, 2=Infant formula feeding, 3=Animal milk, 4=Child Nursery

5= other, specify_____)

MK007. List the different alternatives to breast milk that are used to feed such an infant

(1=Cow milk, 2=Commercial infant formula, 3=Home prepared formula, 4=All,

5=Others specify)

MK008. Would you accept to wet-nurse an infant whose mother has been incapacitated in any way?

(1=Yes, 2=No, 3=Not sure)

MK009. Would you consider the following as alternative feed to such a child?

MK009-01. Surrogate breastfeeding (Wet nursing)

(1=Yes, 2=No, 3=Don't know)

MK 009-02. Expressed and Heat -treated Breast milk

(1=Yes, 2=No, 3=Don't know)

MK010. Commercial infant formula

(1=Yes, 2=No, 3=Don't know)

MK011. Breast milk from milk bank

(1=Yes, 2=No, 3=Don't know)

MK012. Cow's milk

(1=Yes, 2=No, 3=Don't know)

MK013. Goat's milk

(1=Yes, 2=No, 3=Don't know)

MK014. Dried Milk powder

(1=Yes, 2=No, 3=Don't know)

MK15. Why would you prefer any of these alternatives and not the other?

(1= Socio-cultural preference, 2=Nutritional viability, 3= Economic viability,
4=Technical viability, 5= Others specify

MK016. Are there women who do not breastfeed their infants?

(1=Yes, 2=No, 3=Don't know)

MK017. How would you view a woman who opts for one reason or another, not to breastfeed her baby?

(1=Rejection, 2=Apathy, 3=Indifference, 4=Isolation, 5=Don't know,

6= Other, specify_____)

FOCUS GROUP DISCUSSION GUIDE

Men whose spouses were in 15-49 reproductive age bracket and

Women of reproductive age bracket 15-49 years

1. Is the community aware that a child can be HIV positive?
2. How can a child contract HIV?
3. How common is HIV/AIDS among the community? Which groups are most affected?
4. Do people in this community discuss freely about HIV/AIDS?
5. How do close family members react when one of them is suspected to have died of AIDS?
6. In this community, are there women who do not breastfeed their babies?
7. If a woman, for one reason or another decided not to breastfeed her infant, how would the community view her?
8. How did the community traditionally feed a child who was orphaned before the age of 4 months?
9. At present if a mother dies out of any illness and leaves her young baby, how is the child fed? What kinds of foods are used? Are these foods easily accessible and/or affordable? How is the food prepared? Who has the primary responsibility of preparing the food and feeding the child?
10. How many orphans do you know of around this village? How do they get food, clothing and school fees?
11. In this community are there foods that must or must not be eaten by pregnant women or young children? If there are which ones?

12. In the community do families send their children to stay away with relatives? If yes, for what reasons? How healthy or well fed are such children?
13. Can HIV/AIDS be cured?
14. How can infants be prevented from contracting HIV/AIDS?
15. How does HIV/AIDS compare and contrast with *Chira*?
16. Is there herbal medicine or concoctions used in the community for treatment of HIV/AIDS? If yes, which ones?

FOCUS GROUP DISCUSSION GUIDE

(Elderly women/mothers as TBAs, midwives or care givers of orphans)

1. In the past, how did people consider giving birth to a newborn?
2. How was such a newborn fed?
3. How did the community view a mother whose child looked thin and dull because of lack of sufficient food? What is the name given to such kind of suffering?
4. How did most people in the community view a mother who repeatedly lost her children through deaths
5. What could cause such frequent deaths?
6. Suppose a mother died during childbirth or soon after, how was her baby to be fed and cared for? How about at present, have the foods changed?
7. At present, how does the community view a mother who loses her babies through deaths? What can cause such deaths now?
8. In these days if a mother opts not to breastfeed her baby for one reason or another, what would you or members of the community say of such a woman?
9. You have had of a disease called AIDS, haven't you? How can it be prevented or treated?
10. At present, when there is much fear about AIDS, can a mother readily accept to wet-nurse a baby

KEY INFORMANT GUIDE

Health workers- health facility in-charges

1. What is the HIV prevalence in this district?
2. The range of HIV prevention services/commodities offered in this facility.
3. Do you offer PMTCT services in this facility/district?
4. What range of PMTCT interventions are offered in this facility/district?
5. What systems and structures exist that support MTCT interventions in this community/district?
6. How many health facilities offer PMTCT services in this district?
7. How has been community response to these PMTCT services?
8. Challenges/constraints encountered during implementation of PMCT services in the district?
9. Are there socio-cultural practices/misconceptions that affect uptake of PMTCT of HIV services in this community?

3.0 RESEARCH PERMIT FROM NATIONAL COUNCIL OF SCIENCE & TECHNOLOGY

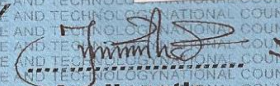
PAGE 3

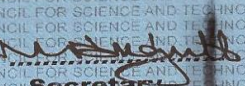
PAGE 2

Research Permit No. **NCST/RR/12/1/MED/011/89**
 Date of issue **6th July 2011**
 Fee received **KSHS1000**

THIS IS TO CERTIFY THAT:

Prof./Dr./Mr./Mrs/Miss/Institution
Godfrey Nyongesa Wapang'ana
 of (Address) **Kenyatta University**
PO BOX 43884, Nairobi
 has been permitted to conduct research in
Location
Rongo District
Nyanza Province
 on the topic: **Assessment of factors influencing**
alternative infant feeding practices among HIV
positive mothers in Rongo District.


Applicant's Signature


Secretary
National Council for Science and Technology

for a period ending **31st Sep, 2011**

CONDITIONS

1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed with-out prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries
5. You are required to submit at least two(2)/four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA
RESEARCH CLEARANCE PERMIT

(CONDITIONS— see back page)

GPk605513mt10/2011

REPUBLIC OF KENYA



NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telegrams: "SCIENCETECH", Nairobi
Telephone: 254-020-241349, 2213102
254-020-310571, 2213123.
Fax: 254-020-2213215, 318245, 318249
When replying please quote

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: **NCST/RRI/12/1/MED-011/84/5**

Date: **6th July, 2011**

Godfrey Nyongesa Wapangána
Kenyatta University
P. O. Box 43844 - 00100
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on **"Assessment of factors influencing alternative infant feeding practices among HIV positive mothers in Rongo District, Western Kenya"** I am pleased to inform you that you have been authorized to undertake research in Rongo District for a period ending **31st September, 2011.**

You are advised to report to **the District Medical Officer of Health, the District Commissioner & the District Education Officer, Rongo District** before embarking on the research project.

On completion of the research, you are expected to submit **one hard copy and one soft copy** of the research report/thesis to our office.


DR. M.K. RUGUTT, Ph.D, HSC
DEPUTY COUNCIL SECRETARY

Copy to:

The District Medical Officer of Health
Rongo District

The District Commissioner
Rongo District

7.0 RESEARCH PERMIT FROM KENYATTA UNIVERSITY



KENYATTA UNIVERSITY GRADUATE SCHOOL

E-mail: kubps@yahoo.com
dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530

Our Ref: I57/CE/12198/04

Date: 31st March, 2011

The Permanent Secretary,
Ministry of Higher Education, Science & Technology,
P.O. Box 30040,
NAIROBI

Dear Sir/Madam,

**RE: RESEARCH AUTHORIZATION FOR GODFREY NYONGESA
WAPANG'ANA REG.NO I57/CE/12198/04**

I write to introduce Godfrey Nyongesa Wapang'ana who is a Postgraduate Student of this University. He is registered for a M.Ph degree programme in the Department of Public Health in the School of Health Sciences.

Mr. Wapang'ana intends to conduct research for a Proposal entitled, "Assessment of Factors Influencing Alternative Infant Feeding Practices among HIV Positive Mothers in Rongo District, Western Kenya".

Any assistance given will be highly appreciated.

Yours faithfully,

A handwritten signature in black ink, appearing to be 'JOHN M. ODONGI', written over a circular stamp.



JOHN M. ODONGI
FOR: DEAN, GRADUATE SCHOOL

JMO/rm

8.0 RESEARCH AUTHORITY LETTER FROM MINISTRY OF PUBLIC HEALTH & SANITATION.

MINISTRY OF PUBLIC HEALTH AND SANITATION

Telegram: DPHO"RONGO
Tel:
Fax: 0202356609
EMAIL: dhmtrongo@yahoo.com
When replying please quote:
RNG/MED/TR/128/011



REPUBLIC OF KENYA

**THE DMOH
RONGO DISTRICT
P.O. BOX 258
RONGO**

5th July 2011

NATIONAL COUNCIL FOR SCIENCE & TECHNOLOGY
P.O. BOX 30623 – 00100
NAIROBI

Dear Sir,

RE: AUTHORITY TO UNDERTAKE RESEARCH IN RONGO DISTRICT.

I wish to notify your honorable office of the research to be conducted in Rongo District by Godfrey Nyongesa Wapang'ana.

We are in receipt of all the relevant document as concerns his research and do hope that the findings of the research will be beneficial to the institution when shared.

I therefore, hold no objection in whatever he wants to undertake.

Thanks in advance.

Yours faithfully

A handwritten signature in blue ink, appearing to read 'S.M. OLILO'.

S.M. OLILO
For: DMOH RONGO DISTRICT

