

**PART A**

**RESEARCH PROPOSAL FOR HEALTH ECONOMICS**

**2008**

**TOPIC:**

**FACTORS INFLUENCING THE CHOICES OF INFANT FEEDING OF HIV-POSITIVE MOTHERS IN SOUTHERN GHANA: THE ROLE OF COUNSELLORS, MOTHERS, FAMILIES AND SOCIO-ECONOMIC STATUS.**

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## **1. BACKGROUND.**

Ghana has a strong breastfeeding culture, where breastfeeding supplemented with other nutritive foods is often practiced in the early life of the infant up to 2 years of age and above (Ghana Statistical Service, 1999). At the same time, the minority practices exclusive breastfeeding (EBF) up to 6 months of age (Ghana Statistical Service, 1999). Initiation of breastfeeding often starts between a few minutes to three days after delivery depending on the type of influence from the community, family members (fathers, grandmothers and others.) and the mother's exposure to health and nutrition information from health workers (Awumbila, 2003). In contrast to developed country settings, almost all mothers in developing countries initiate breastfeeding and do this for a long time (Aidam et al., 2005).

The benefits of breastfeeding are well described in the literature (Kakute et al., 2005, WHO, 2000). Some of the benefits include optimal nutrition, prevention of common childhood illness, improvement of child spacing and reduction in infant and child morbidity, and mortality (Bhandari, 2003, Coutsooudis, 2005). In recent years, there has been conclusive evidence that breastfeeding confers a significant risk of HIV transmission from an infected mother to the child (Coutsooudis, 2005, De Cock et al., 2000). It is estimated that 200,000 to 350,000 infants contract HIV via prolonged breastfeeding (up to 2 years) (De Cock et al., 2000, UNAIDS/WHO, 2005). In Ghana, it

is also estimated that 15 percent of infants born to HIV infected women acquire the infection through breastfeeding (NACP, 2009). Clearly, transmission of HIV through breastfeeding is a pressing public health problem in resource poor settings like Ghana

Given the risk of HIV transmission associated with breastfeeding, the latest international guidelines by (WHO, 2007) on infant feeding, advocate for only using replacement feeding when it is “acceptable, feasible, affordable, sustainable and safe (AFASS)” taking into account local circumstances, the individual woman’s situation and the risks of replacement feeding(WHO, 2007). According to(Leshabari et al., 2007) , these guidelines may not be immediately appropriate in certain settings unless they are adapted to the social and cultural context of the women who make the choices. To help address this debate, various UN agencies developed generic infant feeding guidelines for resource poor settings in 2001.

Since the adoption of the WHO infant feeding guidelines into Mother and Child Health (MCH) services in Ghana in 2006, little has been done with respect to assessing the implications of this for HIV positive mothers, as well as the enabling environment needed for their implementation. By investigating the factors influencing the choices of infant feeding of HIV-positive mothers, this study attempted to contribute to the limited knowledge in this area in Ghana. Furthermore, it seeks to draw attention of policy makers and implementers to areas that need further attention and strengthening.

## **1.1 Problem statement**

Every day children become infected with HIV through mother-to-child transmission (MTCT). It is estimated that between 200,000 to 350,000 infants contract HIV via prolonged breastfeeding each year(De Cock et al., 2000).

The benefits of breastfeeding have been well described in the literature (WHO, 2000a; Kramer et al., 2001). These benefits including providing optimal nutrition, preventing common childhood illnesses and improving child spacing are of particular importance in resource poor countries such as in sub-Saharan Africa. For this reason, the possibility of HIV transmission through breast milk poses a dilemma, particularly in conditions where breastfeeding is a strong cultural norm, and where large numbers of women are infected with HIV. It is estimated that 15% of infants born to HIV infected women acquire the infection through breastfeeding (De Cock et al., 2000). Almost 3% of the pregnant women in Ghana are infected with HIV(NACP, 2009). The infection in children is mainly due to MTCT during pregnancy, at the time of delivery and postnatally through breastfeeding (WHO, 2006).

While there is increasing literature on the feeding practices of HIV infected women postnatally, there have been few reports on the choices women make postnatally, and on whether these infant feeding choices are consistent with the WHO recommendations. Furthermore, little is known about the processes of counseling on infant feeding options, and whether the health workers are achieving their goal of helping women to make the

most appropriate decisions for their circumstances. This study intends to address the above issues by investigating the under-listed research objectives.

## **1.2 Aims and objectives**

The aim of this study is to assess the perspectives of HIV-positive mothers and family members (that is fathers and grandmothers) of the infant feeding options recommended for HIV -infected mothers in Ghana.

More specifically, the objectives of the study are to:

- Assess HIV-positive mothers' knowledge and understanding of the overall WHO guidelines for infant feeding in the context of HIV/AIDS.
- Understand HIV-positive mothers' perspectives, practices and attitudes towards infant feeding options (IFOs).
- Assess the influence of socio-economic status of HIV-positive mothers on infant feeding decisions.
- Assess the perspectives and attitudes of family members (fathers, grandmothers) towards infant feeding options for HIV-positive mothers.

## **1.3 Rational and justification for research.**

To support research on HIV and infant feeding options is one of the priority areas made by WHO for governments in the context of HIV/AIDS and infant feeding. Some of the actions required are to carry out studies in different countries to assess infant feeding options and practices for HIV-positive mothers, on which policies, guidelines and capacity building should be based (WHO, 2006).

According to available information, there are no published studies that document infant feeding practices for HIV infected mothers in Ghana since the incorporation of the guidelines into MCH services in Ghana in 2006.

Every day children become infected with HIV through MTCT. It is estimated that 15% of infants born to HIV infected women acquire the infection through breastfeeding(De Cock et al., 2000). Given such a problem, joint WHO/UNICEF/UNAIDS guidelines on infant feeding have been issued to assist policy makers and health workers in addressing this risk and helping to safeguard the rights of mothers and their children (WHO, 2006). In Ghana women living with HIV, the majority of who are of child-bearing age face a desperate dilemma breastfeeding their babies and risk HIV transmission. The issues surrounding infant feeding for those born to HIV-positive women in Ghana are complex and have been the focus of much debate among HIV researchers, nutritionists and community members. It has yet to be resolved. These issues prompted this research to investigate and assess the ability of HIV-positive mothers, community members as well as the enabling environment needed to implement the various known healthful infant feeding options.



## **2. LITERATURE REVIEW**

### **2.1 Infant feeding options**

Infant feeding options are the recommended measures for reducing perinatal transmission rates from MTCT of HIV. Given the risk of HIV transmission associated with breastfeeding, the simplest and most straightforward approach to prevention is to avoid breastfeeding when mothers are infected (Academy of Pediatrics, 2000).

(WHO, 2000) guidelines for infant feeding in the context of HIV recommend the avoidance of all breastfeeding by all HIV-infected mothers in conditions where foods that can replace breast milk are AFASS. Otherwise, exclusive breast-feeding up to 3–4 months of age, if this is not possible, exclusive breastfeeding. The benefits of breastfeeding have been well described in the literature (Kakute et al., 2005, WHO, 2000). For this reason, the possibility of HIV transmission through breast milk poses a dilemma, particularly in settings where breastfeeding is a strong cultural norm. As such, feeding recommendations for infants of infected HIV-mothers in developing countries remain debatable. In resource-poor settings, this presents a problem for HIV-infected mothers and challenges health workers who counsel them about options for feeding their infants. Alternatives to exclusive breastfeeding recommended by (WHO, 2000) for HIV-infected mothers include: breast milk substitutes (commercial infant formula, home-prepared infant formula); modified breastfeeding (expressed and heat-treated breast milk); and other (breast milk banks, wet nursing).

Available literature indicates that when women want to keep their serostatus secret, it can be difficult for them to comply with prevention of mother-to-child transmission (PMCT) regimens. In communities where breastfeeding is a norm, they may fear that avoidance of breastfeeding will lead others to assume that they are HIV-positive. This is confirmed in Tanzania South Africa and Malawi (Leshabari et al., 2006, Njunga, 2008). According to (Bland et al., 2007) most HIV-infected women did not have the resources for safe replacement feeding, hence choosing appropriately to exclusively breastfeed than to replacement feed. Those women who intended to replacement feed were more likely than the rest to have regular maternal income, clean water supply and to be the main income provider. However, maternal age at delivery, education, water, and refrigerator were not significantly associated with adherence. A study by (Shankar et al., 2005) indicated that for women who decided to replacement feed, the majority did so to reduce the risk of HIV transmission.

## **2.2 Animal milk.**

The issue of whether to include animal milk in the diet of infants under 12 months of age has been debated for decades. Most of the debates have focused on the use of whole cow's milk. The three main concerns raised are that: (a) Cow's milk is low in iron; (b) can cause occult blood loss; and (c) has a high potential renal solute load (Jeffery et al., 2003). Some studies in the 1960's indicated the harm cow's milk could cause. However, recent studies have shown that use of heat-treated cow's milk will eliminate this risk (Dewey et al., 2004). In contrast, they found milk from goats, sheep and camels to be unacceptable, partly because they had never seen the milks used for human consumption. They believed that the animal's characteristics may be transferred to the baby. A recent

study by (Abiona et al., 2006), found that, HIV infected mothers who opted for cow milk and other food items were mothers who were of low socio-economic status and could not afford infant formula.

### **2.3 Infant formula feeding.**

Over time, commercially prepared infant formulas were developed that came closer to approximating the nutritional composition of human milk, and these have become the standard for non-breastfed infants in industrialized countries. Although formula is the recommended infant feeding option for HIV-positive mothers in developed countries (WHO, 2000), for many reasons this may not be a feasible or preferred choice for women in resource-poor communities. For many families the cost of formula may be prohibitive.

With sufficient financial resources, still some settings lack the infrastructure to ensure consistent and safe formula availability during certain conditions (Coutsoudis, 2002). Social attitudes and cultural beliefs about breastfeeding may be so strong that even when educated about the risk of HIV transmission, many women in Africa still choose to breastfeed, and those who do not may face isolation and social stigma (Njunga, 2008). According to (Nduati et al., 2000), where safe water to prepare formula was available, only 70% of women randomized to formula feed their infants actually did so exclusively. According to the estimated 200,000-350,000 infants who contracted HIV through breastfeeding, WHO estimates those 1.5 million infants died because they were not optimally breastfed. These findings have been confirmed in a study in India and Peru (Bahl et al., 2005).

## **2.4 Wet-Nursing.**

Wet-nursing is practicable in some traditional setting where a relative breastfeeds the infant. It was mostly practiced when an infant happened to be bereaved at such a tender age by the mother. WHO recommends that wet-nursing be considered only when a potential wet-nurse is informed of her risk of acquiring HIV from the infant in question; she has been offered HIV counseling and testing; she voluntarily takes a test and is found to be HIV negative; and when wet-nursing takes place in a family context with no payment involved (UNAIDS/WHO, 1998) In the past, wet-nursing was an alternative way of feeding infants whose mothers could not breastfeed but now that practice has declined, and where practiced, it is usually among relations, neighbours, or co-wives (Abiona et al., 2006).

## **2.5 Expressed heat-treated breast milk**

WHO recommend manually expressed, heat-treated breast milk as one alternative to breastfeeding for HIV positive mothers in developing countries. To date, its implementation has not been adequately addressed, researched, supported and/or promoted (Coutsoudis, 2000, Coutsooudis, 2005, UNAIDS/WHO, 2005). This recommendation however, has received little attention. According to (Israel-Ballard et al., 2006), interest in the method varies with region, culture, maternal education and social environment, and that barriers to acceptability should be addressed. In that same study, participants cited some of the advantages using expressed human milk as low cost, convenience and consistent availability as compared to human milk substitutes.

### **3. CONCEPTUALIZING INFANT FEEDING PRACTICES.**

Based on a preliminary review of the literature, it is hypothesized that decisions by HIV-positive mothers with regards to infant feeding is influenced by three important sets of factors. These include knowledge of the feeding guidelines for infants born to HIV positive mothers, socio-economic status of HIV-positive mothers and cultural norms and practices which influence not only the perspectives and practices of mothers but also that of their spouses/partners, family members and the community at large. These factors influence considerations of and the relative important of affordability, availability, acceptability, and sustainability of different feeding options and finally the decision by the mother to adopt a particular option or combination thereof. The schematic representation of the factors influencing replacement feeding options is shown in Figure 1 below.

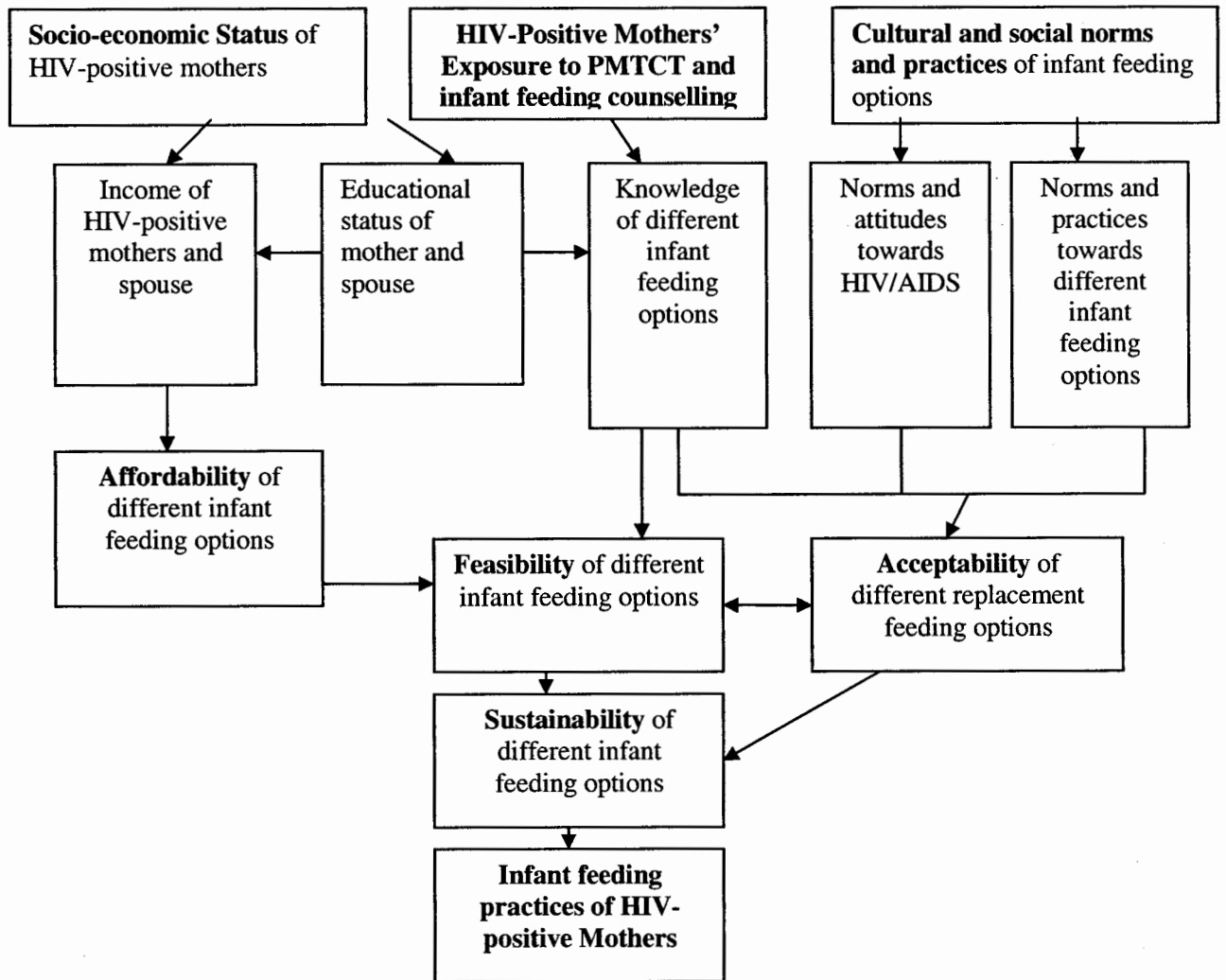
Socio-economic Status (SES) of mothers and HIV-positive mothers more specifically is determined by a range of factors including the mothers' and their spouses' professional status, SES of her family and educational levels. Education can also impact positively on employment and income with implications for issues of affordability. Mothers with higher educational levels and who are socio-economically better off are more likely to adopt healthy infant feeding practices (Desai and S., 1998).

Feasibility correlates with the acceptability of the different replacement feeding options and their sustainability. Eventually, all these together reflect on the practices of HIV-

positive mothers based on adherence or non-adherence of counseling given to them by health workers.

Thus, to promote optimal breastfeeding and complementary feeding practices, interventions (in this instance counseling) need to be targeted not only to individual women but also to changing the context in which infant and child feeding choices are made.

**Figure 1: A conceptual framework for studying infant feeding practice**



## **4.0 METHODOLOGY**

### **4.1 The study sites**

This study is proposed to be conducted at two hospitals in the Manya Krobo District (that is Atua Government Hospital and St. Martin's Catholic Hospital) and one in the Tema Municipality (Tema General Hospital).

The Manya Krobo district is one of the highest HIV affected districts in Ghana according to Sentinel Surveillance data over the years. HIV prevalence rates in the district ranged from 18% in 1992 to 8.4% in 2006 (National AIDS Control Program, 2006). The Manya Krobo District was the first in Ghana to have initiated the National PMTCT Pilot Program in 2001.

The Tema Municipality is part of the Greater Accra Region. HIV has been consistently among the causes of deaths respectively from 2002-2006 in this municipality (The Tema Municipal Health Administration Annual Reports, (2002-2006)). These areas were chosen as the result of HIV being one of the major public health problems, and also requisite infrastructure being put in place.

### **4.2 Study design, participants**

The study is intended to be a health facility and community-based cross-sectional in design involving HIV-positive postnatal clients in the Manya Krobo District and Tema Municipality. The study will employ both quantitative and qualitative methods. The qualitative exploratory survey will consist of focus group discussions (FGDs) with HIV infected feeding mothers and family members of unknown status (fathers and



grandmothers) who consent to participate at the community level. The FGDs for the HIV-positive mothers will take place at the facilities during child welfare clinics and post-natal services.

The facility-based cross-sectional interviews will include HIV positive feeding mothers with infants between 0- 12 months who meets the study inclusion criteria and consents to participate in the study during the period. A nurse-counselor (running the child welfare services clinics) and a research assistant will assist the investigator to recruit the HIV-positive feeding mothers who meet the inclusion criteria and consent to participate in the study. The nurses and research assistants will be made aware of the inclusion criteria and objectives of the study. The objectives will also be explained to each study participant who consented to participate.

The FGDs of the fathers and grandmothers of unknown HIV status will be organized at the community level. These participants will be recruited from the study areas. To be eligible to participate, the fathers and grandmothers had to have infants and young grandchildren who were still breast feeding in order to participate in the FGDs. Separate focus groups will be held for each of the groups. Each focus group will comprise of between 6 and 12 participants and will last between 45minutes and 1 hour. This will provide an opportunity for all the respondents to participate and interact to give their opinions on the issue under discussion. The FGDs will also help gain a detailed knowledge and understanding of feeding options, as well as its acceptability and feasibility among family members and HIV infected feeding mothers.

### 4.3 SAMPLING

#### Sample Size Determination

According to Manya Krobo District Health Directorate Annual reports (2000, 2003, and 2006), 6.0% of postpartum mothers in the District Hospital are HIV-positive. Tema Municipal Health Administration Annual reports (2002-2006), show the proportion is 3.6% at the Tema General Hospital. Assuming a standard error of 10% at 95% confidence level, using the formulae suggested by Fisher et al. (1993), and the sample size required for this study will be determined as follows

$$\text{Therefore, } n \text{ for Manya study site} = \frac{Z^2 pq}{d^2} = \frac{(1.96 \times 1.96) \times (0.06 \times 0.94)}{(0.1 \times 0.1)} = 21$$

Where:

n = the sample size

Z = 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

d = the acceptable degree of accuracy desired.

The formula gave 21 respondents as the sample size. Due to the sensitive nature of HIV/AIDS and the stigma attached to it in the district, it is assumed that out of every five respondents one will refuse to respond hence additional 4 respondents to make up for refusals. This brings the sample size to 25 to be recruited from the two facilities (Atua Government Hospital and St. Martins Catholic Hospital both in Manya Krobo district.

$$\text{Similarly, } n \text{ for Tema study site} = \frac{Z^2pq}{d^2} = \frac{(1.96 \times 1.96) \times (0.036 \times 0.964)}{(0.1 \times 0.1)} = 13$$

The formula gave 13 respondents as the sample size. Due to the sensitive nature of HIV/AIDS and the stigma attached to it in the Municipality, it is assumed that out of every five respondents one will refuse to respond hence additional 2 respondents to make up for refusals. This brings the sample size to 15. In all a total of forty (40) respondents will be recruited for this study.

#### **4.4 Data Collection Techniques and Tools**

The data collection techniques to be employed to elicit information and ideas on the issues under investigation will include structured interviews (SIs) and focus group discussions (DGDs).

Focus group discussion guide, a check list, questionnaire, interviewer's guide, a recorder, are some of the tools to be used in accomplishing this exercise.

#### **4.5 Data analysis**

Data from the survey will be analyzed quantitatively using SPSS Version 16.0. Data from the qualitative component of the study will be analyzed manually in terms of themes and related to study objectives. The data was analysed manually in terms of themes and related to the study objectives. Tape recorded interviews will be transcribed, and translated into English as necessary.

## **4.6 Training**

There will be a two-day training session of research assistants by the investigator on the following:

- introduction to the purpose and objectives of the study
- data collection technique and instruments to be used
- translation of questionnaire
- actual data collection
- ethical issues
- remuneration

## **4.7 Pre-testing and actual data collection**

The data collection techniques and tools will be pre-tested on respondents with similar characteristics as the study participants for possible modification and validation before they are eventually used in the actual data collection.

## **4.8 Ethical considerations**

Participation of subjects will conform to the required ethical guidelines regarding the use of human subjects. The study protocol will be first reviewed by the Proposal Review Board of the University of Cape Town (UCT) for appropriateness and scientific content. An ethical clearance will then be sought from the UCT Ethical Review Committee. Written informed consent, for those who are literates and witnessed verbal informed consent, for the illiterates will be obtained from each study participant at the beginning of the study. Each subject will be informed about the objectives and methods of the study. They will be assured of strict confidentiality with regards to any information obtained from them and will be educated to consent at will.

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## APPENDIX:

### Appendix 1: Timetable

	Months						
	December	January	February	March	April	May	June
Activities	1	2	3	4	5	6	7
Instrument translation	■						
Piloting							
Training of research assistants		■					
Data collection		■	■	■			
Data coding and transcription			■	■	■		
Data entry				■	■		
Data cleaning					■	■	
Analysis and presentation of results						■	■
Thesis writing up	■	■	■	■	■	■	■

## **PART B**

### **LITERATURE REVIEW**

**Factors influencing the choices of infant feeding of HIV positive mothers in southern Ghana: the role of counsellors, mothers, families and socio-economic status.**

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# LITERATURE REVIEW

**WORD COUNT: 7,164**

## **1. INTRODUCTION AND SEARCH STRATEGY**

### **1.1 INTRODUCTION**

It is estimated that more than 400,000 children contracted HIV in 2007 worldwide, the majority of these due to mother-to-child transmission (MTCT) (UNAIDS, 2008). MTCT can occur during pregnancy (i.e. when the child is still in the womb), during delivery, or through breastfeeding (BF) following birth. In the absence of any interventions, the rate of MTCT in developing countries can be as high as 40 percent, with prolonged breastfeeding of up to 24 months accounting for one-third to one-half of these infections (Kourtis et al., 2006). While prevention strategies, such as antiretroviral drugs, elective caesarean section, and avoidance of breastfeeding (BF) are considered to be adequately safe and available in developed countries, this is often not the case in developing countries, where 90 percent of MTCT of HIV occurs (UNAIDS/WHO, 2005). More specifically, with regard to infant feeding, although formula is the recommended infant feeding option for HIV-infected mothers in developed countries, this may not be a feasible or preferred choice for women in resource-poor communities and developing countries for many reasons: the prohibitive cost (Papathakis and Rollins, 2004), lack of infrastructure to ensure consistent availability (Coutsoudis, 2005), and cultural beliefs that may compel mothers to continue BF (Osman, 2009). These socially and culturally embedded practices need to be understood and taken into account when designing and implementing infant feeding programmes in the context of MTCT.

The recommended feeding option for women who are HIV negative or whose status is unknown is to exclusively breastfeed (EBF) their newborn for the first six months, introduce complementary foods after six months and continue BF for two years and beyond (WHO, 2003a). Clearly, the balance between life saving benefits associated with BF and the risk of transmission through BF complicates infant feedings in communities affected by HIV (WHO, 2003b). In 2003 in response to this, WHO, UNICEF, UNAIDS and UNFPA developed guidelines which called for HIV-positive women to avoid BF when replacement feeding (RF) is Acceptable, Feasible, Affordable, Sustainable and Safe (AFASS). Other feeding options recommended include heat treated expressed breast milk or wet nursing of the newborn by HIV-negative when the AFASS criteria is not possible (WHO, 2003a).

In many African cultures, the early introduction of water, herbal teas, and complementary foods is designed to enhance child survival for infants of both HIV-positive mothers and mothers of unknown status` (Davies-Adetugbo and Adebawa, 1997). However, evidence suggests that mixed feeding is the most dangerous feeding option for a young infant since it may cause gut infections that could increase the risks of HIV and other infections (Coovadia et al., 2009, Davies-Adetugbo and Adebawa, 1997). A study from South Africa found that babies EBF for the first three months of life were not more likely to become infected with HIV than those given replacement food and the highest rate of infection was found among babies given a mixed diet (other foods or liquids as well as breast milk)(Coutsoudis et al., 1999). Therefore, when AFASS criteria cannot be met (i.e. ERF is not feasible), HIV-positive mothers are advised to exclusively BF and avoid mixed feedings (WHO, 2003a).

The purpose of this literature review as informed by the aim of the overall study is to examine the evidence (both published and grey) in terms of factors influencing infant feeding

choices of HIV-positive mothers in low- and middle-income countries. More specifically the review covered the following thematic areas:

1 HIV/AIDS and MTCT:

- Globally, Sub-Saharan Africa, and Ghana

2. MTCT and infant feeding guidelines:

- Globally, Sub-Saharan Africa, and Ghana

3. Infant feeding practices:

- Globally, Sub-Saharan Africa, and Ghana
- Factors affecting infant feeding practices
  - Access to counselling & quality of counselling
  - Socio-economic factors
  - Community norms

## **1.2 SEARCH STRATEGY**

This work is based on an extensive review of peer-reviewed articles and grey literature based on the aim and objectives of the study. The initial search for peer-reviewed articles were carried out on Medline Ovid, Pubmed and EBSCOhost, keeping in mind the fact that different authors use different terminology, key words and phrases. Combinations of the following key words and phrases “HIV and infant feeding”, “replacement feeding or alternative feeding”, “international infant feeding guidelines”, “WHO infant feeding guidelines”, “developing countries”, “low-income countries”, “middle-income countries”, “Ghana”, “Sub-Saharan Africa”, “resource poor settings”, “socio-economic status”, “educational status”, “counselling”, “cultural norms and practices”, and “stigma” were used to identify the relevant literature.

The criteria for the search for literature included limiting the review to those papers, reports and articles published over the past 10 years (1999-2009). The review of documents was primarily focused on different infant feeding options for HIV-positive mothers with particular emphasis on low-and-middle-income countries. Based on this, over 200 articles were reviewed. This was supplemented by hand searches of reference lists of relevant articles and discussions with supervisors and infant feeding counsellors in the context of HIV/AIDS since not all the peer-reviewed articles met the inclusion criteria. Finally, 80 published and 3 unpublished were relevant to the objectives of the study.

Given the paucity of relevant peer-reviewed articles, grey literature (including monographs, case studies and reviews) was also an important source of information for this study. Grey literature was identified through general web searches on Google, Google Scholar and from more focused reviews of relevant websites of international organizations (for example, WHO) and also University of Cape Town (UCT) library.

## **2. HIV/AIDS and MTCT**

### **2.1 GLOBALLY**

According to the Joint United Nations Programme on HIV/AIDS (UNAIDS), AIDS is presently the fourth leading cause of death in the world and number one cause in Africa (UNAIDS, 2006b). Since the first recorded case in 1981, HIV/AIDS has grown to become one of the most serious public health challenges globally, contributing to the death of 25 million people annually (WHO, 2006a). Yet its overall impact on the global population has not reached its peak (WHO, 2006a) and HIV/AIDS is on track to becoming the worst epidemic in history with projected death toll reaching 100 million by 2020 (Kates et al., 2002

). The epidemiology of the disease differs between regions. On a global scale, HIV prevalence is intensifying in most regions, with Sub-Saharan Africa, Eastern Europe and Central Asia being the worst hit, accounting for approximately 79 percent of new infections between 1998 and 2003 (Coovadia and Hadingham , 2005). In 2008, of the estimated 33.4 million people living with HIV in the world, the highest burden was in Sub Saharan Africa, representing 67 percent followed by South and South East Asia (Kashi, 2009).

By the end of 2006, an estimated 39.5 million people were living with HIV worldwide, of whom 2.9 million were children (WHO, 2006a). Women and children take on a disproportionate burden of HIV/AIDS, as they continue to experience high rates of new HIV infections, and HIV related illnesses and deaths (WHO, 2006a). In the Caribbean, Central America and South America, rates among pregnant women currently range from 0.1 percent to 5.0 percent. Asia is experiencing a rapidly growing epidemic with sero-prevalence rates in some cities or provinces of Cambodia, India, Indonesia and Thailand ranging from 1 percent to 5 percent. In Eastern Europe, where there has been an exceptionally rapid increase in the number of HIV-infections, the estimated antenatal prevalence is now over 1 percent , and is likely to increase (UNAIDS, 2006a).

Globally, an estimated 600,000 children became infected with HIV in 2000 (UNAIDS, 2000). It is estimated that globally, 420,000 children were newly infected in 2007 and approximately 90 percent of these infections occurred through MTCT (UNAIDS, 2007). Overall, rates of MTCT of HIV-1 vary from 14 percent to 42 percent depending on the studies and the region of focus (Gibb et al., 1999).

In the absence of any intervention, it is estimated that the risk and timing of MTCT of HIV is between 10-15 percent of infants born to HIV-infected mothers during labour and delivery (De Cock et al., 2000). Among women who are infected with HIV and receive no antiretroviral treatment or other interventions, BF can increase the risk of infection between 5-20 percent and prolonged BF for one and half years can increase the rate of MTCT to as high as 45 percent (De Cock et al., 2000). Without treatment, an estimated half of these infected children will die before their second birthday according to this report. The statistics indicates that AIDS has reversed years of steady progress in child survival, and has already doubled infant death rates in the worst-affected countries (De Cock et al., 2000).

## **2.2 SUB-SAHARAN AFRICA**

Sub-Saharan Africa with an estimated 25 million of the 37 million HIV infections, remains the global epicentre of the AIDS pandemic (WHO, 2006a). This region is also home to approximately 13.3 million HIV-positive women of child bearing age, representing 59 percent of the adult population living with HIV in the region (WHO, 2006a).

Women and children in Sub-Saharan Africa are disproportionately affected, with nearly eight in every 10 HIV-infected women worldwide, and nine in every 10 newly-infected children living in this region (UNAIDS, 2006a). In West and Central Africa, HIV prevalence in pregnant women currently reaches 10– 15 percent in some urban areas, with generally lower rates in rural areas. Prevalence in East Africa is higher at 15–25 percent in urban areas and 5– 10 percent in rural areas, while in Southern Africa antenatal sero-prevalence of 25–30 percent and in some urban settings over 40 percent have been reported (UNAIDS, 2006a).

Postnatal transmission of HIV, predominantly through BF, accounts for approximately half of all MTCT in Sub-Saharan Africa where breastfeeding is prolonged (Newell et al., 2006). In this region, 30–50 percent of all untreated HIV-positive children die prematurely before their first birthday and fewer than 30 percent survive beyond five years of age (Dray-Spira et al., 2000), testimony to the fact that the HIV/AIDS epidemic is reversing many of the gains made in child survival. HIV/AIDS accounted for 7.7 percent of deaths of children under five years of age in Sub-Saharan Africa and in certain countries, accounts for more than 40 percent of deaths (Israel-Ballard and Chantry, 2008). Clearly, BF as a source of HIV infection in babies born to HIV-positive mothers represent a public health dilemma, especially in countries with a high HIV prevalence rate and where BF is the norm and essential to child survival.

### **2.3 GHANA**

The first case of AIDS in Ghana was diagnosed in 1986, and by the year 2004 an estimated 380,000 adults and 14,000 children were diagnosed as being HIV-positive (UNAIDS, 2004). The main mode of transmission of the virus in Ghana is through heterosexual intercourse, which accounts for 75 to 80 percent of all HIV/AIDS infections (NACP, 2001). MTCT accounts for 15 percent, and transmission through blood and blood products accounts for 5 percent (NACP, 2001).

Prevalence rates increased from an estimated 2.6 percent in 2000 to 3.6 percent in 2003 and dropped to 3.1 percent in 2004 (NACP, 2001). Current national estimate of HIV prevalence rate, however, put the figure at 1.7 percent (NACP, 2009). However, there are variations by geographic region, gender, age, occupation, and, to some degree, urban-rural residence. According to the 2003 sentinel surveillance report, there are regional variations ranging from below 2 percent in the Upper West Region to around 4 percent in Greater Accra, to almost 7

percent in the Eastern Region (NACP, 2009). HIV prevalence rates are also higher in urban areas, border regions, and mining areas and along major transportation routes (NACP, 2009). Though the epidemic has spread more slowly in Ghana and other West African countries, compared to Eastern and Southern African countries, the situation is worsening and is likely to deteriorate further if left unchecked.

### **3. MTCT AND INFANT FEEDING GUIDELINES**

The benefits of BF, particularly EBF for the first six months of life in terms of growth, development, health and bonding between mother and child are unequivocal (WHO, 2003a). However, as described earlier, breast-feeding may be responsible for a significant percentage of HIV infections in infants and young children (WHO, 2009). At the same time, particularly in resource-constrained settings, where access to clean water is a challenge, the health risks of replacement feeding (i.e. formula) arising from diarrhoea and other infectious diseases is six times greater in formula-fed than breastfed infants (WHO, 2000). On the basis of this information, it is not surprising then that there has been uncertainty on how best to feed infants in the context of HIV (Coutsoudis, 2005; Coutsooudis et al., 2008, Latham and Preble, 2000).

WHO and other UN agencies have over the past decade attempted to provide guidance in relation to this dilemma of optimal infant feeding in regions of poor access to health care, clean water and sanitation and high HIV prevalence. They issued the first set of prevention of MTCT (PMTCT) recommendations which include guidelines on feeding options for infants born to HIV-positive mothers in 2001, which stated that “when replacement feeding is “acceptable, feasible, affordable, sustainable and safe” avoidance of all BF by HIV-infected



mothers is recommended. Otherwise, exclusive breastfeeding is recommended during the first months of life” (WHO, 2001).

The WHO’s definition of exclusive breastfeeding (EBF) is the feeding/nourishing of a child on breast milk alone, with no other liquids, not even water, or solids (WHO, 2001). Drops or syrups, vitamins, mineral supplements, or medicines that are medically prescribed are allowed. EBF also applies to a child who receives only expressed breast milk or is fed only breast milk from a wet-nurse.

Following intensive research in the five year period spanning 2001 to 2006 which quantified the risk of HIV infection through BF, and established that replacement feeding reduced the risk of HIV transmission significantly compared to EBF, a technical consultation convened by WHO on behalf of the Inter-Agency Task Team (IATT) in October 2006 updated these guidelines (WHO, 2006b).

In November 2009, the guidelines were revised again: “all HIV positive mothers, identified during pregnancy, should receive a course of antiretroviral drugs to prevent mother to child transmission. All infants born to HIV-positive mothers should also receive a course of antiretroviral drugs and should exclusively breastfeed for 6 months and complementary feed for up to a year” (WHO, 2009).

It is important to note that PMTCT and infant feeding guidelines have not been developed for specific geographic regions (e.g. Sub-Saharan Africa, South-East Asia). However, the guidelines do distinguish between low-and middle-income countries (i.e. developing countries) on the one hand and high-income countries (i.e. developed countries) on the other

hand. In high income countries, "...in which infant and child mortality rates were low, largely due to low rates of serious infectious diseases and malnutrition, HIV-infected mothers are strongly and appropriately recommended to avoid all breastfeeding" (WHO, 2009). Clearly, these recommendations are different from those for HIV- positive women in resource poor settings, described in the previous paragraph.

It is not surprising then that the numerous revisions to the international infant feeding guidelines for HIV-positive mothers has on the ground lead to confusing messages for HIV-positive mothers and their counsellors and has contributed often to poor feeding patterns particularly mixed feeding which increases the risks for HIV and other infections as described earlier.

To help HIV-positive mothers make the best choice, they should receive counselling that includes information, based on local assessment, about the risks and benefits of various infant-feeding options, and guidance in selecting the most suitable option for them and their babies.

### **3.1 PMTCT AND INFANT FEEDING GUIDELINES: GHANA**

Prevention of Mother to Child Transmission (PMTCT) as part of HIV programme was introduced in 2001 and has since then been adopted by various countries in Sub-Sahara Africa<sup>1</sup> and elsewhere (Druce and Nolan, 2007). The Ministry of Health and Ghana Health Service (GHS) incorporated the international WHO-UN PMTCT guidelines into Mother and Child Health (MCH) programme in 2001 with the aim of reducing MTCT of HIV. This effort also included health service provision improvements and psychosocial support for mothers and children. This called for the training of health workers and para-medicals on PMTCT and

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<sup>1</sup> Ghana, Zimbabwe, Swaziland, Nigeria, Ethiopia, Uganda, Kenya, Tanzania, Malawi, Mozambique, South Africa, Lesotho, Botswana, Zambia

the introduction of HIV voluntary counselling and testing (VCT) for pregnant women, including advising HIV-infected mothers on appropriate alternatives to BF. (WHO-Ghana, 2003).

The PMTCT programme was first started as a pilot programme in two hospitals (Atua Government and St. Martins de Porres) in the Eastern region in Agomanya and Atua in July 2002 and was extended to Korle Bu in June 2004 and Asesewa in May 2005 (WHO-Ghana, 2003). The pilot sites were chosen because of their high HIV sero-prevalence rates. The PMTCT programme was a collaborative effort between the GHS and several partners including Noguchi Institute, UNICEF, WHO and UNAIDS.

Antiretroviral Therapy (ART) was introduced initially at Atua and St. Martins Hospitals in 2003, and Korle Bu and Komfo Anokye in 2004. Key components of the ART program include home-based care (HBC), referral networks and linkages to such existing services as spiritual and social support, and support for orphans and other vulnerable children (OVC). Revision was done regarding the initiation of ART prophylaxis with Zidovudine and Lamivudine during pregnancy with CD4+ count of 350 in line with WHO recommendations (WHO, 2009). Previously ART prophylaxis was initiated at CD4 of 250. In these revisions, EBF is still being promoted, at the same time mothers will be given the prophylaxis at an extended period while BF is done.

In an evaluation of UN-supported PMTCT pilot projects in 11 countries including Ghana, the Population Council concluded that "infant feeding remains the most challenging component of PMTCT programmes...Despite training staff; knowledge and counselling abilities remain weak. Counsellors frequently steer a woman towards an infant feeding method based solely

on her HIV status rather than a comprehensive assessment of her social and economic resources for implementing various feeding options. Moreover, very few programmes provide ongoing support for women to carry out their infant feeding choice once their baby is born (UNICEF, 2003).

Currently, there has been no revision done on the adopted WHO guidelines on HIV and infant feeding to reflect the current WHO guidelines by the Ghana Health Services and partners.

#### **4. INFANT FEEDING PRACTICES**

In this section, infant feeding practices generally and more specifically in the context of HIV/AIDS will be reviewed, globally, in Sub-Saharan Africa and Ghana. This will be followed by an analysis of key factors (i.e. access to and quality of counselling, socio-economic factors and community norms) influencing infant feeding practices.

##### **4.1. INFANT FEEDING PRACTICES: GLOBALLY.**

Infants across all regions of the world are breastfed, although not always exclusively and there is significant variation in the percent of infants who are ever breastfed among regions and among countries within a region (Sika-Bright, 2010, Walker and Adam, 2000).

In a study of infant feeding practices of 35,000 infants categorized by age (0 to 6 months and 6 to 12 months) across 20 developing countries<sup>2</sup>, it was found that the overwhelming majority (more than 90 percent) of infants were breast-fed. “Reported feeding of other fluids was lower among 0 to 6 month olds than 6 to 12 month olds: water (45.9 vs. 87.4 percent),

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<sup>2</sup> Ethiopia, Ghana, Kenya, Malawi, Namibia, Nigeria, Uganda, Zambia, Zimbabwe, Armenia, Egypt, Jordan, Bangladesh, Cambodia, India, Indonesia, Nepal, Philippines, Vietnam, Kazakhstan

other milk products (11.9 vs. 29.6 percent), infant formula (9.0 vs. 15.1 percent), and other liquids (15.1 vs. 41.0 percent). ... 21.9 percent of mothers reported feeding 0 to 6 month old infants some type of solid food, and 80.1 percent of mothers reported feeding solids to 6 to 12 month olds” (Marriott et al., 2007, page 518).

It is important to appreciate that as little as a generation ago; breast-feeding was practiced by a minority of mothers in the high-income countries. In the UK, in the 1970s, some parts of the country less than a third of the mothers attempted to breastfeed and among those who had, many of them ceased breastfeeding within a month (Walker and Adam, 2000). In the USA during the same period, observations revealed that only 10 percent of infants were breast-fed until 4 months. Furthermore, it was found that the practice was less common among lower income mothers compared with the higher-income mothers. In the same time period, in Johannesburg (South Africa) amongst the white population, it was found that only 50 percent of mothers had initiated breast-feeding at a maternity hospital, of which only 5 to 7 percent of them continued breast-feeding at 6 weeks (Walker and Adam, 2000). In a study conducted in Denmark in 1991, a large percentage of women initiated breastfeeding and continued to do so until the infant was 6 months (Vestermarck et al., 1991).

Similarly, other studies from Tanzania and South Africa document very high BF initiation rates among rural women of unknown HIV status (De Paoli et al., 2001, Bland et al., 2000). Based on the international evidence from several studies, while BF is widely practiced, EBF is, however rare and early mixed feeding is prevalent (Becquet et al., 2005b, Coutsoudis, 2005). According to Walker and Adam, a generation ago the practice of breastfeeding was very low despite the far greater need for breast-feeding. That now it has risen considerably as

compared to Africa and in most developing populations (Walker and Adam, 2000). However, the practice is tending to decrease, especially among urban mothers (Walker and Adam, 2000). While the most common reasons given as insufficiency of breast milk and employment of mothers, they are also under strong and increasing pressure to use proprietary replacement foods.

#### **4.2. INFANT FEEDING PRACTICES IN THE SUB-SAHARAN AFRICAN REGION**

In Sub-Saharan Africa, infant feeding practices vary from country to country and within countries between rural and urban areas, and between the poor and those less in need. A study conducted in Tanzania and Uganda found that the average reported duration of BF by HIV-infected mothers was 24 months in Tanzania but 18 months in Uganda (Poggensee et al., 2004). As noted in the previous section, while breast-feeding is widely practiced, EBF is not and mixed feeding is the prevailing norm across the globe and in Sub-Saharan Africa.

In the context of MTCT, a study from South Africa reported that fluids were commonly introduced within the first 48 hours of life, and infant formula from six to eight weeks after birth (Bland et al., 2002). Mothers tended to view formula as beneficial for their babies' survival and when mothers were absent from home, formula was given. A study from Abidjan, Cote d'Ivoire also reported that EBF was not practiced, since all women who participated in this study had indicated that they had given water to their babies on the day following delivery (Becquet et al., 2005a). Another study in Uganda indicated that while all HIV-positive mothers started out EBF, they had switched to mixed feeding once the baby was three months old (Bakaki, 2002). In Tanzania, it was found that although HIV-positive mothers understood the risks of HIV virus transmission through BF, they did not consider EBF as a feasible option, beyond three months because 'breast milk was considered

insufficient for the child's growth' (Leshabari et al., 2007b). In the same study, it was reported that there was a widespread belief by mothers that babies need water in their first month because they "feel thirsty". As a result babies were sometimes given water even before BF was established. Mothers reported that they introduced complementary foods (light porridge and cow's milk) at the age of two months. Clearly, the prime obstacle to a PMTCT strategy lies in the fact that mixed feeding patterns and neither EBF nor ERF is the norm in Sub-Saharan Africa.

Similarly, Njom et al. in Cameroon, evaluated the feasibility of infant feeding options for HIV-positive mothers and found that following counselling, although 85 percent of the women opted for exclusive replacement feeding initially, 83 percent of them finally mixed fed (Njom et al., 2007). The reasons underlying this will be explored in a later section.

From this review it is clear that in many Sub-Saharan African settings while BF initiation is near universal, the practice of early mixed feeding is deeply ingrained. This poses a serious challenge particularly in the context of MTCT where either EBF or ERF is the recommendation. The factors influencing the decision of HIV infected mothers, which include social and community, socio-economic and exposure to and quality of counselling are of the utmost importance and will be considered in the later sections of this review.

#### **4.3. INFANT FEEDING PRACTICES: GHANA**

Ghana has a strong BF culture and initiation of BF starts anywhere between a few minutes after delivery to three days depending on the type of influence from family members (husbands and mothers-in-laws), other significant community members and the mother's exposure to health and nutrition information from health workers (Awumbila, 2003).

However, like elsewhere in Sub-Saharan Africa and the globe, only 17 percent of the infants under the age of 6 months are EBF (Ghana Statistical Service, 1999). Mixed feeding is the norm, with 38 percent being fed on a combination of breast milk, water or water based liquids (Ghana Statistical Service, 1999). Typically, food supplementation (liquids, porridges, and semi-solid foods) is initiated when the infant is between 2-3 months and is a widespread practice (Ghana Statistical Service, 1999).

Similarly, Davis and colleagues, in Kumasi (Ghana) reported that, water and glucose solutions are widely given to infants, often when the infant is born because it is believed that following the birthing process, the infant is exhausted and thirsty and requires water to quench his thirst. Moreover, feeding the infant water is also regarded as cultural gesture to welcome the child into the world. In some urban and rural areas, following delivery newborns are fed on water or herbal mixture until the second or third day, and only after does the infant receive breast milk. The reason for this is to purge the baby and clean the stomach. In some instances, mothers depend on a wet-nurse until the breast milk appears acceptable for the baby's consumption (Awumbila, 2003), that however, this practice is in decline. "Koko", a maize-based fermented porridge is often fed, to infants as early as the first month of life (Davis et al., 2003), a stage where the child is supposed to be EBF. It was also found that the main obstacles to EBF were maternal employment, breast and nipple problems, perceived milk insufficiency, and pressure from family members (Otoo, 2009). Clearly, the socio-cultural and economic influences on acceptable infant feeding practices are varied and complex and vary greatly from one society to another.



#### **4.4. ACCESS TO COUNSELLING & QUALITY OF COUNSELLING**

PMTCT interventions include HIV testing and counselling, antiretroviral prophylaxis or treatment for mother and infant, modified obstetric practices, and modified infant-feeding practices (De Cock et al., 2000). In this context, infant feeding counselling is an important intervention for the prevention of PMTCT of HIV. Comprehensive PMTCT of HIV programmes have nearly eliminated MTCT in developed countries (UNAIDS, 2006a). However, progress in implementing PMTCT interventions in resource-limited countries has been slow (Dabis and Ekpini, 2002). The World Health Organization advises that HIV-positive mothers should be offered nondirective counselling on various infant feeding options that are feasible, affordable, safe, sustainable, and effective in the local context. Chopra et al. report that counselling is central to preparing mothers for making a proper informed choice about adequate feeding practices to prevent their infants from acquiring HIV infection (Chopra et al., 2005).

To support counselling on HIV and infant feeding as a routine part of MCH, health workers and counsellors should receive training on, modes of HIV transmission, strategies to reduce the risk of MTCT, risks and benefits of different feeding options, lactation management, optimal infant and young child feeding, methods for safe implementation of different feeding options for HIV-positive mothers, counselling protocols and confidentiality (Davies-Adetugbo and Adebawa, 1997) Several studies have been conducted in Sub-Saharan Africa which have assessed the knowledge and understanding of HIV-positive mothers of counselling on infant feeding options in the context of MTCT, following PMTCT counselling.

One of such study conducted in Zambia, which assessed the knowledge and understanding of HIV-positive mothers who had received pre- and post-test HIV counselling of the WHO

recommended infant feeding guideline, found that 35 percent of the women surveyed understood the risk of transmission of HIV through BF. This knowledge was a key factor in them opting to exclusively breastfeed in order to avoid transmitting HIV to their infants (Aika et al., 2003). Similarly a study conducted in Harare, Zimbabwe found that women's knowledge of HIV and infant feeding options had improved with increased exposure to counselling. Moreover, counselled mothers were 8.4 times more likely to EBF than the mothers who were not exposed to counselling (Piwoz et al., 2005). Another study which was carried out in the Kilimanjaro Region of Tanzania and evaluated HIV-positive women's knowledge following infant feeding counselling found that the women demonstrated a good understanding of HIV transmission through BF and recommended infant feeding options.

While access to counselling is important, the quality of counselling is as important. In South Africa it was found that despite receiving counselling, knowledge and understanding of feeding options was poor. This was demonstrated by the fact that 85 percent of the women who had been counselled could not define the term EBF (Chopra et al., 2005). Similarly, a cross-sectional study in Sao Paulo (Brazil) found that post-counselling, HIV-positive mothers knowledge of infant feeding options and consequences of mixed feeding was very weak (Rea et al., 2006). In addition, the women's knowledge on safe preparation of infant formula was poor and this was attributed to the fact that this had not been demonstrated to them by counsellors. Similar results were found in a Tanzanian study which documented HIV-positive mothers' knowledge and understanding on different infant feeding options post counselling since various feeding options were not explained to them in detail during counselling (de Paoli et al., 2002). A cross-country study across three resource-poor settings (Burkina Faso, Cambodia and Cameroon) found that while health workers consider economic aspects first in terms of the decision-making process surrounding infant feeding, the affected women mostly

consider social aspects relating to the risk of being stigmatized as a "bad mother" or as HIV-positive (Desclaux and Alfieri, 2009). This suggests that the different perspectives of counsellors and HIV-positive women are different with implications for actual infant feeding practices.

Chopra and Rollins (2008), assessed the quality of health workers trained in BF and infant feeding counselling in Botswana, Kenya, Malawi and Uganda in 2008. A key finding across all these countries was that, less than half of the health workers provided adequate information on infant feeding options to the mothers. As a result mothers' knowledge of infant feeding options in the context of HIV/AIDS was poor. The problem of poor quality counselling was also found in a study in northern Tanzania (Leshabari et al., 2007a). It was found that the counsellors were not able to provide quality and relevant advice to HIV-positive women on how best to feed their infants. Moreover, the counsellors perceived EBF and ERF as culturally and socially unsuitable for the mothers which lead to directive counselling. According to Ehrnst and Zetterstrom (2005), the recommendations given and the way in which counselling is performed are the most important determinants of a mother's decision about how to feed her infant.

Clearly, in the context of PMTCT, adequate training of health workers in infant feeding counselling is required. This needs to be followed by monitoring and supervision to ensure that there is effective support to mothers in areas of high HIV prevalence. Such efforts can contribute to a decrease in mixed feeding and an increase uptake of either EBF or ERF.

In summary, reducing transmission of HIV through BF and mixed feeding, is dependent on the knowledge and understanding of these mothers and the quality of counselling information given to them by health workers. Poor quality of counselling is likely to reduce the

effectiveness of these programmes. Therefore it is important that HIV-positive mothers are provided with correct information during counselling on infant feeding options to enable them choose a feeding option and adhere to it. It is important to note that while there is a growing body of literature on counselling and quality of counselling globally, there is paucity of studies investigating this question in Ghana.

Clearly, PMTCT programs need to intensify their efforts to provide mothers with infant feeding counselling and support.

#### **4.5. SOCIO-ECONOMIC STATUS AND INFANT FEEDING PRACTICES**

The guidelines on HIV and infant feeding needs to be cognisant of and reflective of the fact that HIV/AIDS and poverty are inextricably linked (Whiteside, 2002). In a context of HIV/AIDS and poverty, women and girls are particularly vulnerable as they are among the poorest in society (WHO, 2002). This is particularly true in Sub-Saharan Africa and other poor regions. It is not surprising then that infant feeding options which often include financial considerations (e.g. cost of formula) and require access to clean water and sanitation need to be considered as important influences on the decision-making process of HIV-positive mothers. This is illustrated in the following country studies across Sub-Saharan Africa. A study in Kilimanjaro (Tanzania) of recommended replacement infant feeding options found that women considered formula as unaffordable but if the formula was distributed free of charge, the majority of them (82 percent) would choose this option (de Paoli et al., 2004). In a similar study in Uganda it was reported that HIV-positive mothers started BF their babies once UNICEF stopped donating free infant formula, suggesting issues of affordability influencing their shift (Wendo, 2003). Similarly in South Africa, HIV-positive women opted for replacement feeding when formula milk was provided free (Doherty et al., 2006a).

Moreover, women of lower socio-economic status found it difficult to continue formula feeding when there was an interruption in the supply of free formula (Doherty et al., 2006a). Similar results were reported from Kenya (Kiarie et al., 2004) and Nigeria (Sadoh et al., 2008). Taken together, all these studies are unanimous in reinforcing that socio-economic factors are critical influences in the choices women make with regard to infant feeding.

Besides the cost of formula, other socio-economic considerations including access to clean water, electricity, and other infrastructure necessary for the safe and hygienic preparation of formula milk need to be considered. In the Nigerian study, poor access to clean water for the preparation of formula milk was an important barrier to replacement feeding (Sadoh et al., 2008).

In South Africa, it was found that women who possessed a kettle, flask and electricity found it easier to feed their infants with formula milk during the night (Doherty et al., 2006b). Still in South Africa, in the province of KwaZulu Natal, it was reported that women who intended to replacement feed were more likely to have access to clean water and a regular income (Bland et al., 2007). Similarly, in a cross-sectional study in Eastern Uganda, the higher the educational levels and socio-economic status of women, the more likely they were to adopt appropriate infant feeding practices (Fadnes et al., 2009a).

It is obvious that the socio-economic position of HIV-positive women is an important factor which influences the infant feeding decision-making process and can often explain why women who indicate their intention to replacement feed, change their decisions postpartum because of the socio-economic challenges they face. This underscores the importance of counselling and support which extends beyond the antenatal period.

#### **4.6. COMMUNITY NORMS AND INFANT FEEDING PRACTICES.**

As noted earlier, mixed-feeding and not exclusive breast-feeding is the norm across many cultures across the world and these practices are embedded within cultural norms where communities, husbands and other significant family members play a decisive role in infant feeding decisions (Buskens et al., 2007).

The influence that families and communities exert is the same irrespective of the HIV status of the women. In Sub-Saharan Africa, family members encourage women infected with HIV to continue BF (although not exclusively) as a cultural norm (Njunga, 2008, Leshabari et al., 2006). BF is seen as the only acceptable infant feeding method and the only way to fulfil ideals of being a good mother. In a qualitative study in South Africa which examined infant feeding decision making and practices among HIV-positive women, it was found that key characteristics of women who achieved success in exclusivity (either in their BF or formula feeding) included the ability to resist pressure from the family to introduce other fluids and to recall key messages on MTCT risks and mixed feeding. Among women who maintained EBF, a strong belief in the benefits of BF and a supportive home environment was important (Doherty et al., 2006b).

In addition, societal expectations and norms also exert a powerful influence. In Botswana, it was found that although formula feeding among HIV-positive women was strongly encouraged by counsellors and formula was provided by the clinic, women went home only to practice mixed feeding (Shapiro et al., 2003). This was attributed to influences from extended families and the community members. Similarly, Omari et al. reported in Zambia that HIV-positive women changed to mixed feeding although having started out with ERF.

Once again, reasons included socio-cultural and expectations of family members (partners and mothers-in-law, extended families) and community members (Omari et al., 2003). In Tanzania, HIV-positive mothers who were not able to exclusively replacement feed, continued mixed feeding since they believed their milk was not enough to make the baby grow 'fat and shiny' as expected by kin and neighbours (Leshabari et al., 2007b). They were also generally concerned that EBF might raise suspicion of their HIV-positive status. Clearly pressure and social expectations from family members (husbands, grandmothers and mothers-in-laws), friends and neighbours influence infant feeding intentions and practices of HIV-positive mothers.

Apart from family and community members influences, studies conducted in Sub-Saharan Africa have reported social stigma as one of the barriers to the practice of EBF or ERF by HIV-positive mothers (Pia, 2008, Skinner and Mfecane, 2004). These findings are confirmed in several other studies. In South Africa, it was reported that fear of disclosure of HIV status and stigma had weakened the ability of HIV-positive mothers to resist entrenched family and community norms that encourage early introduction of fluids and solids (Doherty, 2006b). Similarly, in Tanzania it was found that failure to EBF or ERF by HIV-positive mothers was related to fear of disclosure of their HIV status. It was also found that stigma and secrecy surrounding HIV/AIDS make the choice of replacement feeding by HIV-positive mothers more difficult in communities with a strong BF tradition. As a result HIV-positive women who did not disclose their status but chose replacement feeding often practiced in secret (Leshabari, 2008).

The effect of fear of stigma is also described in a recent study in KwaZulu-Natal, South Africa where stigma and disclosure of HIV status was cited by HIV-positive women as a

reason which severely challenged their ability to adhere to their chosen infant feeding option (Sibeko et al., 2009). The fear of abandonment by spouses is also described in rural Malawi, where husbands abandoned their wives following their disclosure of their HIV status (Njunga, 2008). Therefore, HIV-related stigma and fear of rejection is a major factor influencing the decision-making process of HIV-positive mothers.

In conclusion, although HIV-positive mothers might receive appropriate PMTCT and infant feeding counselling, they often face a dilemma in balancing what is appropriate and in the interests of their infant's health and nutrition and the influence from their families and communities. As described in this section, the pressure from societal norms and the risk of stigma and being ostracized if their HIV status is discovered often means that women often succumb to the societal pressures and continue mixed feeding which often adversely affects the survival and growth of the infant. Therefore, unless local beliefs and customs surrounding infant feeding and the socio-cultural aspects of HIV/AIDS is understood by policy makers and programme implementers, PMTCT programmes will only be partially successful in influencing feeding practices of HIV-positive women.

Apart from socio-economic factors, access to and quality of counselling and community norms, practices and stigma, the review of this literature did not identify any other factors which influence the infant feeding decision-making process of HIV-positive women.

## **6. SUMMARY AND GAPS IN THE LITERATURE**

From this review, it is clear that in many African settings BF initiation is near universal, and early mixed feeding patterns are deeply entrenched. Adopting either EBF or ERF represents departures from the social norms. In addition, while counselling is important and a necessary



condition for improved feeding choices for HIV-positive mothers, the influence of socio-economic factors, family and community members, often result in women not being able to adhere to the recommended infant feeding option. While there is empirical evidence in Sub-Saharan Africa explaining these factors, there is limited empirical evidence in Ghana explaining why this so.

From the literature reviewed on Ghana, very little is known on factors influencing infant feeding choices for HIV-positive mothers and the role of families, socio-cultural and economic context in this direction, since the adoption by the Ghana Ministry of Health of the WHO guidelines on infant feeding in 2001. This study seek to fill this gap by documenting the knowledge and understanding, perceptions, attitudes and practices of family members and HIV-positive mothers of the recommended infant feedings methods in Ghana.

## **7. CONCEPTUALIZING INFANT FEEDING PRACTICES.**

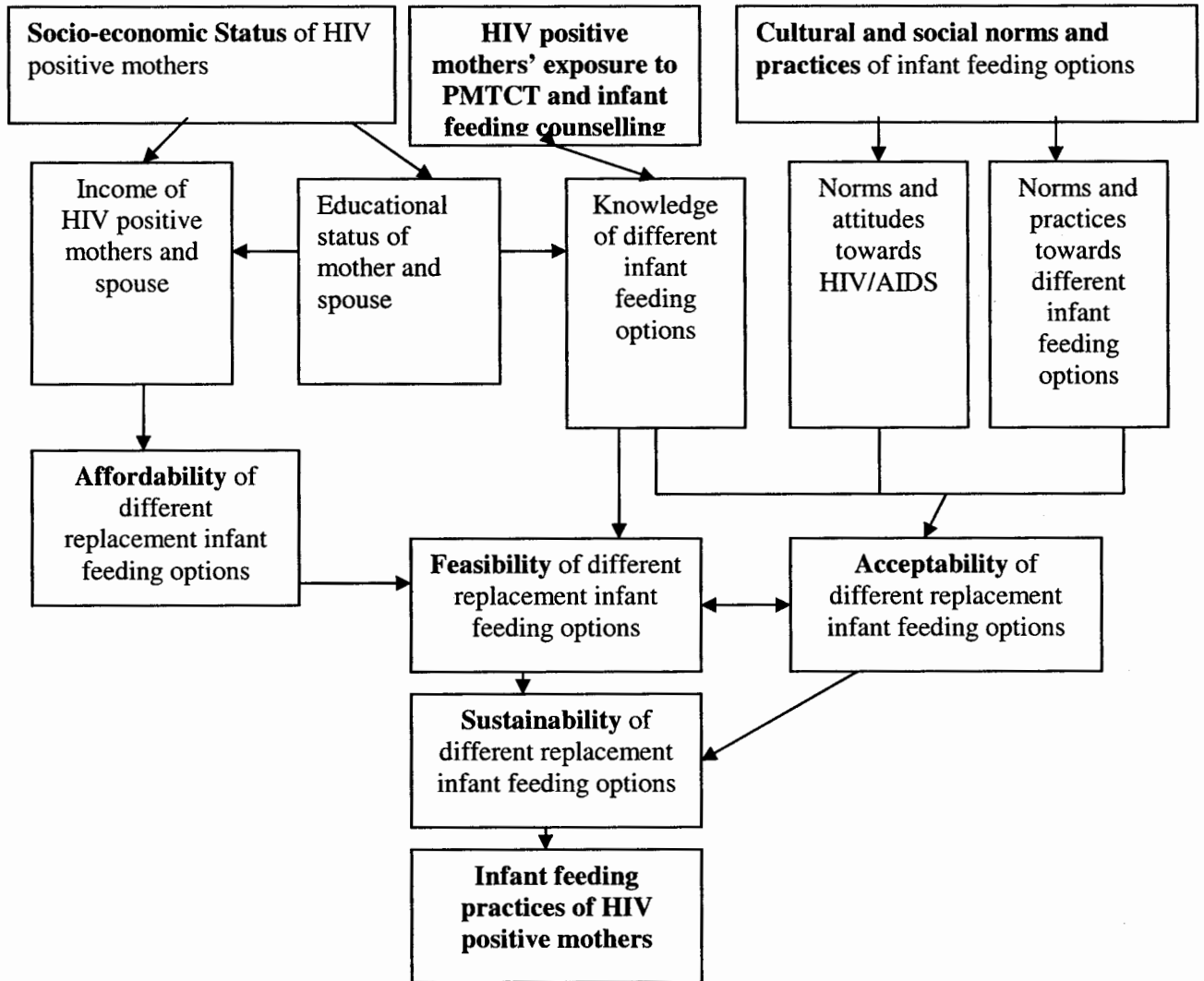
Based on the review of the literature, it is hypothesized that decisions by HIV-positive mothers with regards to infant feeding is influenced by three important sets of factors. These include knowledge of the feeding guidelines for infants born to HIV-positive mothers, socio-economic status of HIV-positive mothers and cultural norms and practices which influence not only the perspectives and practices of mothers but also that of their spouses/partners, family members and the community at large. These factors influence considerations of and the relative important of affordability, availability, acceptability, and sustainability of different feeding options and finally the decision by the mother to adopt a particular option or combination thereof. The schematic representation of the factors influencing replacement feeding options is shown in Figure 1 below.

Socio-economic status of mothers and HIV-positive mothers more specifically is determined by a range of factors including the mothers' and their spouses' professional status, SES of her family and educational levels. Education can also impact positively on employment and income with implications for issues of affordability. Mothers with higher educational levels and who are socio-economically better off are more likely to adopt healthy infant feeding practices (Fadnes et al., 2009b).

Feasibility correlates with the acceptability of the different replacement feeding options and their sustainability. Eventually, all these together reflect on the practices of HIV-positive mothers based on adherence or non-adherence of counselling given to them by health workers.

Thus, to promote optimal BF and complementary feeding practices, interventions (in this instance counselling) need to be targeted not only to individual women but also to changing the context in which infant and child feeding choices are made.

**Figure 1: A conceptual framework for studying infant feeding practice**



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**PART C**  
**MATERNAL AND CHILD NUTRITION JOURNAL GUIDELINES TO BE USED**

**FACTORS INFLUENCING THE CHOICES OF INFANT FEEDING OF HIV POSITIVE  
MOTHERS IN SOUTHERN GHANA: THE ROLE OF COUNSELLORS, MOTHERS,  
FAMILIES AND SOCIO-ECONOMIC STATUS.**

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## **ABSTRACT**

This study assessed the perspectives of HIV-positive mothers and family members (i.e. grandmothers and fathers) of infant feeding options for HIV-positive mothers in southern Ghana. This entailed individual interviews with 40 HIV-positive mothers with infants, and 6 focus group discussions with HIV-positive mothers, fathers and grandmothers of unknown status in two urban districts.

All infants born to the HIV-positive mothers in both districts had been breastfed. Breastfeeding was initiated any time between three hours and three days following birth. While some of the infants had been exclusively breast-fed, none had been exclusively replacement fed. Early mixed feeding patterns are deeply entrenched and the adoption of either EBF or ERF or both, represents departures from the social norms. Barriers to replacement feeding by HIV-positive mothers' included cultural and familial influences, socio-economic factors (including cost of infant formula, and lack of access to resources (for example, fridges, clean water, fuel and others) which are necessary for the safe preparation and storage of formula milk and fear over stigma and discrimination. Interventions designed to promote safer infant feeding among HIV-infected mothers in these settings need to be mindful of these barriers (socio-economic, cultural and familial) that these women face. Failure by policy makers to incorporate these issues will continue to lead to a gap between well-intended policies and programmes, and actual practices of HIV-positive mothers.

Keywords: cultural norms, HIV-positive mothers, socio-economic status, infant feeding options, Ghana.

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**Word Count: 222**

## **INTRODUCTION**

The benefits of breastfeeding relating to nutrition, prevention of common childhood illness, child spacing, reduction in infant and child morbidity and mortality are well described in the literature (Coutsoudis, 2005, Kakute et al., 2005, WHO, 2000). However, in recent years, there has been conclusive evidence that breastfeeding confers a significant risk of HIV transmission from an infected mother to the child (Coutsoudis, 2005, De Cock et al., 2000). Globally, it is estimated that 200,000 to 350,000 infants contract HIV via prolonged breastfeeding (up to 2 years) (De Cock et al., 2000). In Ghana, the focus of this paper, it is estimated that 15 percent of infants born to HIV infected women acquire the infection through breastfeeding (NACP, 2009).

Ghana, like other developing countries across the world, has a strong breastfeeding culture, where breastfeeding supplemented with other nutritive foods is often practiced in the early life of the infant up to 2 years of age and above. Initiation of breastfeeding often starts between a few minutes to three days after delivery depending on the type of influence from the community, family members (fathers, grandmothers and others) and the mother's exposure to health and nutrition information from health workers (Awumbila, 2003).

Despite the strong breastfeeding culture, only a minority of women practice exclusive breastfeeding (EBF) up to 6 months of age (Ghana Statistical Service, 1999). Davis (et al; 2003) reported that in Ghana, water and glucose solutions are customarily given to infants, shortly after birth since it is believed that following the birthing process, the infant is exhausted and thirsty and requires water to quench his or thirst. Moreover, feeding the infant water is also regarded as cultural gesture to welcome the child into the world. In addition, most mothers in Ghana give “koko”, a maize-based fermented porridge, to their infants as early as the first month of life (Davis et al., 2003), a stage when it is recommended that the child be exclusively breastfed. In the context of HIV/AIDS, there is conclusive evidence that mixed feeding is associated with increased risk of MTCT of HIV (Coutsoudis et al., 2001, Iliff et al., 2005).

Given the risk of HIV transmission associated with breastfeeding, current international guidelines on infant feeding, advocate for only using replacement feeding when it is acceptable, feasible, affordable, sustainable and safe (AFASS) taking into account local circumstances, the individual woman's situation and the risks of replacement feeding (WHO, 2007). According to Leshabari (et al., 2007), these guidelines may not be immediately appropriate in certain settings unless they are adapted to the social and cultural context of the women who make the choices.

Since the adoption of the WHO infant feeding guidelines into Mother and Child Health (MCH) services in Ghana in 2001, little has been done with respect to assessing the implications of this in terms of influences, choices and practices of HIV-positive mothers, as well as the enabling environment needed for their implementation. By investigating the factors influencing infant feeding choices of HIV-positive mothers, this study attempted to contribute to the limited knowledge in this area in Ghana. Furthermore, it seeks to draw attention of policy makers and implementers to areas that need further attention and strengthening.

### **Aims and Objectives of this Study.**

The aim of this study was to assess the perspectives of HIV-positive mothers and family members (fathers and grandmothers) of the infant feeding options for HIV infected mothers in Ghana. The specific objectives of this study were to 1) assess HIV-positive mothers' knowledge and understanding of the WHO guidelines for infant feeding in the context of HIV/AIDS; 2) understand HIV-positive mothers' perspectives, practices and attitudes towards infant feeding options (IFOs); 3) assess the influence of socio-economic status of HIV-positive mothers on infant feeding decisions and 4) assess the perspectives and attitudes of family members towards infant feeding options for HIV-positive mothers.

### **MATERIALS AND METHODS**

The study was carried out in 3 urban hospitals between December 2008 and February 2009. The hospitals included Tema General Hospital in the Tema Municipality in Greater Accra Region, St Martin's Catholic Hospital, and Atua Government Hospital in Agromanya, Manya Krobo

District in the Eastern Region. The three hospitals were chosen since they were the first to pilot the National Prevention of Mother-to-Child-Transmission of HIV (PMTCT) and the antiretroviral therapy programme in 2001. Both districts have good infrastructure in terms of electricity, roads, and public standpipes and bore holes.

The two districts are among the highest HIV affected districts in Ghana (NACP, 2009). According to Manya -Krobo District Health Directorate Annual reports (2000, 2003, and 2006), 6.0 percent of postpartum mothers in the District Hospital are HIV- positive. Annual reports from Tema Municipal Health Administration (2002-2006), indicate that 3.6 percent postpartum mothers at the Tema General Hospital are HIV-positive.

The Manya -Krobo District which is a mix of urban and rural has an estimated population of 167,424 (Ghana Statistical Service, 1999). The Krobos and Ewes are the largest ethnic groups and Christians account for 76.4 percent of the population, while the remainder is Muslims' and traditionalists. The major economic sectors in the district are farming, fishing, trading, artisan jobs and government (that is public administration).

In Manya-Krobo, there are six health sub-districts which provide mainly preventive services and four hospitals, which serve as the first referral point. These hospitals include the two study sites (Atua Government Hospital and St. Martin's Catholic Hospital), Akuse Hospital, and Asesewa Hospital. There are 9 private clinics and maternity homes.

The Tema municipality is 30 km east of the capital city Accra and has a population of approximately 655,688 (Ghana Statistical Service, 1999). Tema is a vibrant commercial and industrial city. The municipality has urban, semi urban and rural areas and is a cosmopolitan society with a mix of cultures.

There are 7 public health facilities including the Tema General Hospital (a study site), Tema Polyclinic and Tema Municipal Assembly Maternity clinic, 4 health centres and about 84 private health facilities, including hospitals, clinics and maternity homes.

The study employed both quantitative (structured interviews [SIs]) and qualitative (focus group discussions [FGDs]) methods since the topic of focus requires an enquiry into socio-cultural factors .These two methods were used for triangulation to help to widen and deepen the

understanding of issues of infant feeding practices. The data collection tools were adapted from Abiona (2006) who conducted a similar study in south-west Nigeria in 2006.

The quantitative component was a cross-sectional hospital-based survey of HIV-positive mothers with infants aged between 0-12 months. The mothers who met the selection criteria and agreed to participate in the study during child welfare clinics and postnatal services at the hospitals were purposively recruited. Forty HIV-positive mothers were recruited across the three hospitals (fifteen from Tema General Hospital, ten from Atua Government Hospital and fifteen from St. Martin's Catholic Hospital). In this study, few women were interviewed than required in terms of my sample estimate. Therefore, this is a pilot study investigating the research questions."

Each interview lasted approximately 45 minutes. For this study, two field workers with previous survey experience were recruited. In order to ensure reliable and valid data, the two fieldworkers participated in a 2-day intensive training workshop followed by a one-day pre-testing of the tools.

Six FGDs were conducted with forty-one participants. FGDs were conducted with the following participants: First, HIV-positive mothers with infants aged between 0-12 months. (Seven from Manya-Krobo and six from Tema). Across both study districts, the same HIV- positive mothers who participated in the SIs also participated in the FGDs. These participants were recruited from the three hospitals. Second, fathers of unknown HIV status (Seven from Manya-Krobo and seven from Tema). These participants were recruited from local churches and clinics. To be eligible to participate, the fathers had to have infants. Lastly, grandmothers of unknown HIV status were recruited (Seven from Manya-Krobo and seven from Tema). Like the fathers, these participants were recruited from local churches and clinics.

In the FGDs one interviewer served as the moderator and while the other took notes. The author served as an assistant moderator. The moderator was responsible for conducting the discussions according to the FGD guide and keeping the conversation flowing. The FGDs were tape-recorded.

The interview guide covered a broad range of topics and was flexible in order to cover questions on emerging relevant themes, which were included in subsequent discussions for the validation and clarification of unanticipated findings.

Ethical approval for the study was obtained from the Ethical Review Board of the University of Cape Town and Ghana Health Service Ethical Review Committee (GHS-ERC: 04/1/08). A written, informed consent was obtained from each participant prior to the interviews and FGDs. No names or data that could identify individual participants were collected, and the data were treated in a strictly confidential manner.

Statistical analysis of the data was performed using Statistical Packages for Social Scientist (SPSS) version 16.0. The FGDs were tape-recorded, transcribed and typed. The data was analysed manually in terms of themes and related to the study objectives.

## **RESULTS**

### **Socio-Demographic Characteristics of Structured Interview Participants**

As noted earlier, forty HIV-positive mothers were interviewed (15 in Tema district, 25 in Manya-Krobo district) and their socio demographic profiles including that of their partners is summarized in Table 1. The age of the participants varied between 19 -43 years and the average age was 30 years. Christianity is the dominant religion among the respondents in both districts. The average age of all infants was 6 months ranging from 5 days to 12 months. Twenty four of these infants were under the age of six months and sixteen were between 6-12 months.

The majority (34; 85 percent) of the respondents in both districts had a spouse or partner living with them. Approximately, two thirds of them had formal education across both districts. Most of the women were employed as traders.

There were slight differences between the two districts in terms of the type of employment that women's partners were engaged in. Four of the partners from Tema were government workers compared to none from Manya-Krobo district.

### **HIV-Positive Mothers' Practices, Perceptions and Attitudes Towards Different Feeding Options**

This section describes firstly the infant feeding practices among HIV- positive mothers surveyed across the 3 hospitals in the 2 districts and secondly, drawing on both the interviews and FGDs, describes their perceptions and attitudes towards different feeding options.

Fifteen out of 24 (62%) infants under six months had been EBF for between a period of 0-6 months (Table 2). The remaining nine (38%) were given breast milk in addition to other foods (i.e. mixed foods). Of the 16 infants between the ages of 6-12 months, nine (56%) had been EBF for between a period of 0-6 months and 7 (44%) were given breast milk in addition to other foods (Table 3). Other foods typically included water, traditional medicines and cereal foods, and was often initiated between one and three months based on influence from family members and cultural norms. None of the infants were exclusive formula fed.

However, mothers who mixed-fed their infants were aware of the guidelines recommending not introducing complementary feeds prior to 6 months of EBF and cited the transmission of HIV to the infant as the basis for this recommendation, but seemed helpless in the face of pressure from family members. Their reasons for being unable to stand by their decision not to mix-feed varied from fear over their HIV status being discovered and their subordinate role and lack of autonomy over decision-making vis-à-vis their husbands and mothers-in-law.

*“Though, I was told by the nurses about the risk of an HIV-positive mother introducing solids or liquids in addition to the breast milk, I introduced water in the first month of exclusive breastfeeding under the instruction of my husband since I could not tell him that I was HIV-positive” (Mothers FGD- Tema)*

*“My husband gave my baby local concoctions when it was around two months old. I told him about the nurses’ advice to exclusive breastfeed but he never listened” (Mothers FGD-Manyakrobo).*

*“I was away from home and when my child was crying for food the grandmother gave it mashed yam and water” (Mothers FGD- Manyakrobo)*

*“The grandmother insisted and fed my three months old baby with porridge when I was sick with the reason that my breast milk was not enough to satisfy my baby” (Mothers FGD- Tema).*



In both the FGDs and the SIs, all the HIV-positive mothers expressed great concern over the social consequences of not breastfeeding. Fears over stigmatization were often cited.

*“Immediately people realize that you are not breastfeeding your baby, they just conclude that you have the disease AIDS. If they finally get to know you have the disease, they will make you the subject of discussion and a laughing stock in the area. It is really a hell for some of us” (Mothers FGD- Tema).*

*“The situation is better if you are not living in an extended family house or a compound household. If you are living with your partner alone and he knows your problem the easier it is to formula feed your baby without a problem” (Mothers FGD- Manya-Krobo).*

*“Hmmm as for the consequences for not breastfeeding they are numerous. Women not breastfeeding in this community are classified as having HIV or AIDS as the result of a curse from an immoral life” (Mothers SIs- Tema).*

In this population, the women in both the FGDs and individual interviews identified two important factors, namely stigma and the fear over their HIV status being discovered and secondly the lack of autonomy and the influence that husbands and mothers-in-law wielded over them as contributing to mixed feeding and their failure to adhere to infant feeding guidelines.

### **Knowledge and Understanding of HIV-Positive Mothers of MTCT and Infant Feeding Guidelines.**

Thirty three out of the 40 (83%) HIV-positive mothers interviewed from both districts had received counseling on mother-to-child transmission (MTCT) of HIV and WHO recommended feeding options for infants during either antenatal care or postnatal services. During the FGDs, the women demonstrated a good understanding of MTCT transmission, especially postnatal transmission:

*“Infants can also acquire HIV from their infected mothers’ breast, if the baby happens to bite the teat of the breast or if there is a sore on the teat.”(Mothers FGD, Tema).*

Across both districts, 36 of them (n=40, 90%) mentioned the infant feeding options to include EBF and ERF. During the FGDs with mothers, majority of them from both districts correctly understood EBF.

*“EBF is the feeding of the infant with breast milk only with exception of prescribed medicines, up to six months from the day of birth”. Mothers FGD, Manya-Krobo)*

*“When a baby is fed on breast milk alone from birth without water and any food unless medicines prescribed by the doctor it is called EBF” (Mothers FGD, Tema).*

Minority of the mothers from both districts partially understood ERF.

*“ERF is a situation where an infant is fed on only breast milk substitutes such as infant formula, porridge and other foods from birth” .(Mothers FGD, Manya-Krobo ).*

*“ It is a situation where an infant is not given breast milk but is fed with either breast-milk substitutes such as formula milk and other traditional foods like maize/millet porridge, and others” (Mothers FGD, Tema).*

Grandmothers and fathers across both districts had a limited knowledge on EBF and ERF during FGDs since none of them seem to understand the terms.

*“Our wives will be in a better position to tell what EBF and ERF is since they deal with the nurses directly” (Fathers FGD-Manya-Krobo).*

*“I don’t think one will be able to give right definition of these terms but I think the EBF as the name depicts is the giving of breast milk to the baby always by the mother” (Fathers FGD-Tema).*

*“EBF mean feeding the infant with breast milk s ” (Grandmothers FGD- Tema).*

*“ERF is the opposite of EBF. If I am right then it means feeding the infant with other foods without breast milk (Grandmothers FGD- Manya-Krobo ).*

Less common infant feeding methods, such as wet-nursing, expressed heat-treated breast milk and modified animal milk were neither well understood, accepted or regarded as feasible options by all the 40 (100) individual women interviewed. They also reported in the FGDs that during counseling, some of these options were mentioned, but were not discussed in detailed.

*“Expressing breast milk and boiling it to feed a baby was mentioned briefly by the nurses during counseling but was not demonstrated to us” (Mothers FGD- Manya- Krobo)*

*“The nurses mentioned the use of animal milk to feed a baby during counseling but it was not discussed in detailed”. (Mothers FGD,-Tema).*

*“In order to avoid transmitting an HIV to the baby, the nurses told us that an HIV negative nursing mother can breastfeed the baby of an HIV-positive mother.(Mothers FGD- Manya-Krobo).*

*“The time the nurses were advising us on how to feed our babies they emphasized on exclusive breastfeeding and exclusive replacement feeding using formula milk and nothing else” (Mothers FGD- Tema).*

Therefore, their knowledge and understanding of these options was poor.

### **Influence of Socio-Economic Status of HIV-Positive Mothers on Infant Feeding Practices.**

As noted above, none of the 40 mothers interviewed practiced ERF. All the 40 (100) cited the cost of infant formula as a key reason. The socio-economic status of mothers and in this instance those who are HIV-positive has an important influence on their decision-making particularly in relation to replacement feeding. Both respondents and participants in the SIs and FGDs respectively, across both districts viewed the current cost of a tin of infant formula milk of sixteen Ghana cedis (GH¢16 ≈ (\$11) as unaffordable.

*“Feeding the infant with only formula milk will be difficult for some of us considering our financial status” (Mothers FGD-Tema).*

*If even you begin feeding your infant with formula alone somewhere along the line one is likely to give up due to the cost (Mothers FGD- Manya-Krobo).*

Of concern is the reporting that on account of formula milk being expensive, it necessitated it being used alongside traditional foods contributing to the practice of mixed feeding.

*“A tin of formula milk is small and expensive, it also finishes very fast if the baby is feeding well. The cost is compelling some of us to manage the formula milk with some local foods to sustain the replacement feeding” (Mothers FGD-Tema).*

*“Because some of us do not have the money to ensure continuous purchase of the formula milk, we decide to use it economically by adding other foods though we know that feeding the baby exclusively on formula is the best.” (Mothers FGD-Manya-Krobo).*

However, all the mothers 40 (100%) in the survey and the FGDs were confident that they would be able to practice replacement feeding successfully as recommended by health workers if infant formula was distributed free of charge or subsidized.

*“No mother will not like to exclusively formula feed her baby if infant formula milk is offered free of charge since that will take the burden of cost away” (Mothers FGD- Manya-Krobo).*

*“If even the price of a tin of infant formula milk is subsidized by half of the present cost it will help us a lot to use formula milk only to feed our babies” (Mothers FGD-Tema).*

*“I think if you pick 40 mothers at random and ask them how many of them will be able to exclusive formula feed their infants as required you may get between 3 and 5, but if the same mothers are offered infant formula milk free then I think they will all choose that option ” (Mothers SIs-Tema)*

Other socio-economic challenges linked to problems encountered in the preparation of infant formula foods which was reported by 17 out of 40 (43%) of the women interviewed. Frequent problems included the time required in fetching wood and making fire, and resources (buying of cooking utensils, travelling to purchase infant formula). Other challenges included access to clean water and having to devote time for other activities including household chores, all of

which speak to issues of socio-economic challenges that these women face. Related to this was access to storage facilities (e.g. freezers and fridges) which are important for the safe storage of formula milk.

*“Some of us don’t have fridges or freezers to store leftover prepared formula foods to feed our babies later when they need it as advised by health workers” (Mothers FGD- Tema).*

The importance of being employed and having a regular source of income was also identified as important.

*“ Considering the cost of a tin of infant formula, it is not easy to formula feed the baby if a mother is not having a regular source of income and any support like some of us” (Mothers FGD- Manya Krobo*

### **Perceptions and attitudes of family members towards IFOs for HIV-positive mothers.**

Results from the 4 FGDs held with fathers and grandmothers in both districts, show that the knowledge of the link between breastfeeding and the HIV infection from mother to child was good. In addition, MTCT of HIV was understood to occur during pregnancy, delivery and breastfeeding.

*A mother who is HIV- positive can equally transmit the disease to her infant in the process of delivery if she is operated upon and care is not taking (Fathers FGD, Tema).*

*“It is possible for a woman to transmit any disease she is having to the baby during the time of pregnancy or after delivery during breast feeding” (Grandmother FGD, Manya-Krobo).*

It was also understood that in order to reduce the risk of HIV transmission via breastfeeding, replacement feeding had to be considered.

*“These days mothers who have the HIV virus are advised by health workers to avoid breastfeeding and feed their infants with infant formula milk to avoid transmitting the disease to their infants.”(Fathers FGD, Tema).*

*“ Since it is possible for an infected mother to transfer the HIV virus to the infant through her breast milk, then an alternative infant feeding method is likely to be welcomed I believe.” (Fathers FGD, Manya-Krobo).*

*“If it will demand an infected mother stopping breastfeeding altogether to prevent the infant from getting the HIV virus it is in the right direction” (Grandmothers FGD-Tema).*

Paradoxically, despite the acknowledgement that replacement feeding had to be considered in order to reduce the risk of HIV transmission via breastfeeding, participants were very vocal about the benefits of breastfeeding and argued for its continuation, for reasons of mother-child bonding and communication.

*“Non-breast fed children misses the motherly love and communication that is usually created between the mother and the baby in the course of breastfeeding, through voice and smell and by touch.”(Grandmothers FGD- Manya-Krobo).*

*“Whichever infant feeding method the mother adopts, it must be supplemented with breast milk since breastfeeding strengthens the social bond between the mother and the infant.”(Fathers FGD- Tema).*

The second quote above suggests that the participants, in this instance did not fully understand the guideline on replacement feeding which meant that breast-feeding had to be stopped altogether.

Fathers and grandmothers discussed the practice of giving water, traditional medicines and local foods to a newly born baby.

*“The new born baby is welcomed by giving water or herbal mixture for it to become part of the family as custom demands. Such traditional medicines have the potency of making the baby to fight against evil spirits which come its way” (Fathers FGD-Manya-Krobo).*

*“The giving of water to the new born baby is just like how one welcomes a visitor or a stranger to the home with water” (Grandmothers FGD- Tema).*

In addition, participants expressed several misconceptions about alternate replacement options (expressed heat-treated breast milk and animal milk) and regarded them as the least acceptable options.

*“The practice of expressing breast milk to boil and feed babies is not been practiced in our community. We have never seen or heard of it before. I don’t think mothers will be allowed to do that” (Fathers FGD- Manya-Krobo).*

*“I don’t think animal’s milk is good for a baby’s consumption since a baby can develop the character of the animal by feeding on its milk. Also, it is very difficult to digest.” (Grandmothers FGD- Tema).*

However, according to participants, wet-nursing was growing less popular because of the fear of transmitting diseases, including HIV.

*“Wet-nursing used to be a normal practice between mothers in the community when one of them was sick. This is not done anymore due to fears of transmitting diseases such as HIV virus and other diseases through the breast milk.” (Fathers FGD-Tema).*

*“It is dangerous to practice wet-nursing these days, especially, if the wet-nurse’s HIV status is not known before wet-nursing starts”(Grandmothers FGD- Manya-Krobo).*

*“Even if the wet-nurse is tested for HIV before wet-nursing starts, she can contract the disease in the course of breastfeeding. The wet nurse can equally get it from the baby if the baby had already contracted it from the mother” (Grandmothers FGD- Tema).*

Clearly, although the participants understood MTCT and the recommendation of replacement feeding, they still supported mixed-feeding (breast-feeding and the introduction of water and foods) during infancy. This discussion reinforces the difficulty that women with HIV face in adhering to infant feeding in the face of the often over-whelming pressures that they face from their partners and families in patriarchal societies.

## **Knowledge and Perceptions of HIV/AIDS**

During the FGDs held with HIV-positive mothers, grandmothers and fathers, the participants despite demonstrating a fair understanding of HIV/AIDS in terms of its sources of transmission with respect to children and adults, they also held several misconceptions:

*“Young children and babies can acquire HIV through the process of boring ear holes, giving tribal marks, circumcision.” (Fathers FGD, Manya-Krobo).*

*“Adults and babies can contract the disease through barbering, injection, nail cutting, if infected instruments are used and unprotected sex” (Mothers FGD-Manya-Krobo).*

*“Babies can contract HIV through physical contact through sweat and kissing with from an infected person” (Grandmothers FGD, Tema).*

Sources of information on HIV/AIDS included radio, health workers, posters and friends.

*“We have heard it from the televisions and the radios and sometimes from friends discussing it” (Grandmothers FGD- Manya-Krobo).*

*“Health workers talk about it always and also advise us on what to do to avoid giving the disease to our infants” (Mothers FGD- Manya-Krobo).*

*“HIV/AIDS is not a strange thing in our community at all. Both adults and children are aware of it” (Fathers FGD-Tema).*

During the discussion on community’s reactions to persons with HIV/AIDS, stigma figured prominently in the discourse within the community and the household contexts. The HIV-positive mothers openly discussed fears of been pointed fingers by some of the members in the community or family for not breast feeding. HIV-infected mothers agreed that using formula or other human milk substitutes, as well as expressing human milk, could indicate that the mother was HIV-positive and thus target for further stigma in the community.



*“They will say you have the disease called HIV/AIDS that is why you are not breastfeeding concluded by an HIV-positive mother” (Mothers FGD, Manya-Krobo).*

*“Non-breast feeding mothers in the community are pointed fingers as those having HIV/AIDS” (Mothers FGD-Tema).*

The problem of stigma did not feature in the FGDs held with grandmothers and fathers as it did in the FGDs with the mothers, since they held contrary views on the use of formula or other human milk substitutes, as well as expressing human milk.

*“Feeding babies infants with infant formula is a sign of high socio-economic status in this community since it is only the rich people who can afford it” (Fathers FGD- Manya-Krobo).*

*“Mothers who are in formal employment mostly feed their babies with infant formula or expressed breast milk since they are always busy to attend to their babies” (Fathers FGD-Tema).*

*“If you see a mother expressing the breast milk to feed her baby then you should know she has a problem with the breast” (Grandmothers FGD- Manya-Krobo).*

## **DISCUSSION**

Studying the socio-cultural and economic environment of HIV-positive mothers and communities in the context of infant feeding in relation to the WHO infant feeding recommendations is of critical importance for understanding the reasons why there is often a gap between knowledge and actual practices.

Amongst the 40 HIV-positive mothers surveyed in both districts, the majority reported receiving counseling on infant feeding options and many of them were able to define EBF and to a lesser extent ERF correctly, as well as showing a high degree of the understanding of the increased risk of MTCT through breastfeeding. They also understood that ERF was necessary in order to avoid transmission of the HIV virus to their infants. These findings are consistent with similar studies

in Tanzania (de Paoli et al., 2002), Thailand (Talawat et al., 2002) and South Africa (Thairu et al., 2005). However, while mothers were knowledgeable of infant formula as a replacement option, their awareness of other options such as animal milk, wet-nursing and expressed heat treated breast milk was limited and this can be attributed to a gap in counseling. This gap has also been found in other cross-country studies in Botswana, Kenya, Malawi and Uganda (Chopra and Rollins, 2008) and is common across PMTCT programmes (Koniz-Booher et al., 2004), and the lack of family support for the infant feeding decision taken by the mother, almost inevitably leads to mixed feeding and the risk of MTCT of HIV (Coutsoudis et al., 2001).

In terms of practices, all infants born to the surveyed HIV-positive mothers had been breastfed. During the FGDs held with HIV-positive mothers, grand-mothers and fathers, it was reported by all three groups that breastfeeding was vital for bonding between mother and child and is important for the infants' health. This is similar to other studies in Ghana and Tanzania which found that breastfeeding is a social norm and a culturally entrenched practice (Awumbila, 2003, Davis et al., 2003 Ghana Statistical Service, 1999, (Leshabari et al., 2007). Clearly, this has important implications in the context of HIV/AIDS and the recommended replacement feeding options for HIV-positive mothers.

Clearly, HIV-positive mothers practicing "new" infant feeding methods in these communities face huge social disapproval due to the deeply ingrained beliefs of the benefits of breastfeeding for the baby. In this study, HIV-positive mothers often felt compelled to hide the fact that they formula fed over fear of stigma. Fear of disclosure may be an impediment to choosing formula feeding (Kuhn et al., 1999). In countries where breastfeeding is the norm, formula feeding has been known to alert a woman's family to the fact that she is HIV-positive, and this may result in her being abused or shunned (de Paoli et al., 2002). Choosing to use replacement feed is tantamount to HIV positive mothers announcing their HIV status, and consequently, this has many implications including extreme consequences such as violence and divorce (Adejuyigbe et al., 2008, Njunga, 2008). Stigma and discrimination in relation to HIV/AIDS is widespread in Ghana where only 15 percent of men and 8 percent of women respectively were found to have accepting attitudes toward people with HIV/AIDS (NACP, 2009). As knowledge of HIV

transmission through breastfeeding is disseminated into local communities, a woman who opts for replacement feeding will be carefully watched (Leshabari et al., 2007). It is not surprising then that women who choose to formula feed do so in secret. Similar studies in Uganda and Tanzania have confirmed that HIV-positive mothers who succeeded in adhering to replacement feeding had disclosed their status to the family members and received support (Leshabari et al., 2007, Matovu et al., 2002).

Magoni and Giuliano claim that, it is near impossible to adhere to EBF and ERF because both are alien concepts in African societies where mixed feeding is the norm (Magoni and Giuliano (2005). This was supported by the individual interviews with HIV-positive women as well as the FGDs held with HIV-positive mothers, grand-mothers and fathers in this study. The reasons given for mixed feeding in this study include amongst others the custom that every stranger (including newborns) is welcomed to the household with water. Entrenched family and social pressure, and cultural norms compel mothers in Ghana and other developing countries to maintain mixed feeding (Awumbila, 2003, Davis et al., 2003, Becquet et al., 2005a, Kiarie et al., 2004). In addition, stigma may serve as an additional factor influencing the continuation of mixed feeding and the failure of HIV-positive mothers to adhere to the guidelines to either EBF or ERF. The advice given by counselors to HIV-positive mothers to either EBF or ERF thus entails substantial worry for many mothers, as it simply goes against the local norm of early supplementation of water, juice, herbal mixtures, porridge, and prolonged partial breastfeeding for up to two years (Becquet et al., 2005b, Leshabari et al., 2007).

Similar to this study, other studies have reported cost and socio-economic status of the HIV positive mothers as important barriers to replacement feeding (De Paoli. et al., 2004, Kuhn et al., 2004).

Across many developing countries, many HIV-positive women do not have the resources to prepare replacement feeds in an acceptable, feasible, affordable, sustainable and safe manner (WHO, 2000). This study had similar findings. Financial access in terms of affordability has

important implications for being able to choose and adhere to appropriate feeding practice. This study also found that all the mothers were confident they would use infant formula if distributed free of charge. This is consistent with a study in Tanzania (De Paoli. et al., 2004).

Animal milk and manually expressed heat-treated breast milk was not considered the normal practice or acceptable by participants (that is fathers, grandmothers, and HIV-positive mothers). However, participants argued that, if for instance, expressed heat-treated breast milk is proven safe, it could be used as infant feeding option for HIV-positive mothers within their communities. Wet-nursing and animal milk were not considered viable and safe options, mainly due to the fear of transmission of diseases between the wet-nurse and the infant. This finding is consistent with that of (Abiona et al., 2006, Leshabari et al., 2007) in Nigeria and Tanzania respectively. There is the need to explore with counselors, why the full range of feeding options (that is heat- treated breast milk, animal milk and wet-nursing) are not discussed with mothers. This will also provide an opportunity for discussing the associated misconceptions that are prevalent and associated with these options. Based on this, it does appear that the guidelines need to be refined further to take account of mothers and community fears over these other options.

A key finding of this study is that families (that is fathers, grandmothers) friends and community members play a leading role in infant feeding practices and in the context of HIV infection through breastfeeding, this often leads to non-compliance with infant feeding guidelines. This demands the need for a multi-dimensional behavioural change strategy involving mothers, family members and significant community members. Health education efforts should focus not only on narrowly promoting EBF and ERF amongst HIV-positive women, but also on changing the knowledge, perception, understanding and attitudes of families and communities and also explicitly deal with the issue of mixed feeding. Studies have shown that socio-cultural factors militating against ERF are amenable to interventions such as maternal and community education and counseling, as well as training of health workers on infant feeding support (Chopra et al., 2005, Piwoz et al., 2005).

It is recommended that the involvement of a male partner in antenatal care be integrated into the public health system. This is important if the disclosure of HIV status is to be promoted since non-disclosure to partners often encourages mixed feeding and poor adherence to replacement feeding. Partners should be counseled along with their wives at the time of testing. Measures to support both husband and wife must be put in place to prevent the negative effects of this on their relationship.

This study has provided information on the factors influencing infant feeding choices among HIV-positive mothers in two urban districts in Eastern and Greater Accra regions. However, caution must be exercised in generalizing these results. Firstly, since a limited number of participants were recruited the results may not be representative of the two districts as a whole and for the country in general. Secondly, the results of this study pertain to urban southern Ghana and may not be relevant to women in rural northern Ghana due to socio-cultural and economic differences. Another limitation is personal interviews with mothers of infants aged 0-12 months; ideally the study should have looked at equal numbers of infants under 6 months and over 6 months of age. However, these findings could be used as a guide in counseling mothers and informing communities in similar settings.

## **KEY MESSAGES**

- (1) This study found that initiation of breastfeeding was universal, and early mixed feeding patterns are deeply entrenched.
- (2) The adoption of either EBF or ERF or both, represents departures from the social norms.
- (3) Despite awareness of transmission of HIV through breastfeeding and mixed feeding, barriers to replacement feeding by HIV-positive mothers' included cultural and familial influences, cost of infant formula, and the non-availability of resources (for example, fridges, clean water, fuel and others) and fear over stigma and discrimination.
- (4) Since cost of formula feed was identified as a barrier, other locally available cheap and safe replacement feeds with equivalent nutritional value may need to be considered.
- (5) Interventions designed to promote safer infant feeding among HIV-infected mothers in these settings need to be mindful of the barriers (socio-economic, cultural and familial) that

women face. Failure by policy makers to incorporate these issues will continue to lead to a gap between well-intended policies and programmes, and actual practices of HIV-positive mothers.

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### **CONFLICT OF INTEREST**

None declared.

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**TABLES**

**Table 1. Socio Demographic Profile of the study Population.**

<b>Characteristics</b>	<b>HIV-positive mothers-Tema (n=15) (%)</b>	<b>HIV-positive mothers-Manyakrobo (n=25) (%)</b>	<b>Total sample (n=40) (%)</b>
<b>Age (years)</b>	<b>n (%)</b>	<b>n (%)</b>	<b>n (%)</b>
19-29	7 (47)	13 (52)	20 (50)
30-39	8 (53)	9 (36)	17 (42.5)
40+	0 (0)	3 (12)	3 (7.5)
<b>Education</b>			
Middle/JSS	7 (47)	7 (28)	14 (35)
Primary	1 (7)	7 (28)	8 (20)
Secondary/Vocational.	2 (13)	1 (4)	3 (7.5)
Post-secondary.	0 (0)	1 (4)	1 (2.5)
No education	5 (33)	9 (36)	14 (35)
<b>Husband's education</b>			
Middle/JSS	7 (54)	15 (60)	22 (55)
Primary	1 (8)	3 (12)	4 (10)
Secondary/Voc.	3 (23)	4 (16)	7 (17.5)
Post-sec.	2 (15)	0 (0)	2 (5)
No education	0 (0)	3 (12)	5 (12.5)
<b>Marital status</b>			
Married/cohabitating	13 (87)	21 (84)	34 (85)
Never married/single parent/ separated/divorced	2 (13)	4 (16)	6 (15)
<b>Employment</b>			
Trader/artisan	11 (73)	17 (68)	28 (70)
Farmer	0 (0)	2 (8)	2 (5)
Government worker	1 (7)	2 (8)	3 (7.5)
House wife/unemployed	3 (20)	4 (16)	7 (17.5)
<b>Husband's employment</b>			
Trader/artisan	6 (46)	16 (64)	22 (57)
Farmer	3 (23)	6 (24)	9 (24)
Government worker	4 (31)	0 (0)	4 (11)
Unemployed		3 (12)	3 (8)
<b>Religion</b>			
Christian	11 (73)	25 (100)	36 (90)
Muslim	4 (27)	0 (0)	4 (10)

**Table 2. HIV-positive mothers feeding practices for infants under 6 months**

Infant age in months	Ever breastfed infant	Exclusive Breastfeeding		Other foods in addition to Breast milk 0-6 months	Exclusive Formula Feeding	Total
		0-3 months	4-6 months			
0-3	15	10	-	5	0	15
4-5	9	-	5	4	0	9
Total	24	10	5	9	0	24

**Table 3. HIV-positive mothers feeding practices for infants between 6 and 12 months**

Infant age in months	Ever breastfed infant	Exclusive Breastfeeding		Other foods in addition to Breast milk 0-6 months	Exclusive Formula Feeding	Total
		0-3 months	4-6 months			
6-9	5	2	1	2	0	5
10-12	11	3	3	5	0	11
Total	16	5	4	7	0	16

## **PART D**

### **STUDY PROTOCOL**

### **QUESTIONNAIRES**

FACTORS INFLUENCING THE CHOICES OF INFANT FEEDING OF HIV POSITIVE MOTHERS IN SOUTHERN GHANA: THE ROLE OF COUNSELLORS, MOTHERS, FAMILIES AND SOCIO-ECONOMIC STATUS.

## MOTHERS FACILITY INTERVIEW GUIDE.

### Introduction

This questionnaire is designed to obtain information from you regarding the prevailing Infant Feeding Practices, Mother-to-Child Transmission of HIV and Infant Feeding options available for HIV positive mothers. The results of this study will be used by the researcher (student) from University of Cape Town to write his MPH thesis in Health Economics. The results will also be useful in designing appropriate interventions aimed at reducing vertical transmission of HIV. This information will be treated with the confidentiality that it deserves and will not be used for any purpose other than those outlined here. Your participation in this survey will be of great value to the researcher and we appreciate your co-operation.

- USE THIS QUESTIONNAIRE TO INTERVIEW MOTHERS WITH BABIES WHO ARE BETWEEN 0-12 MONTHS!

### Complete Pre-Interview Questions

(a) Date: \_\_\_\_\_

(b) Interviewer's Name: \_\_\_\_\_

(c) Name of facility \_\_\_\_\_

### SECTION A. INFORMATION ABOUT CHILD

1. What is the age of your child now?	Age ..... Months
2. Child date of birth (Day Year)	Month

**SECTION B. DEMOGRAPHIC CHARACTERISTICS**  
**INFORMATION ABOUT MOTHER**

3. Age of mother	Age ..... years
4. Highest level of education	<ol style="list-style-type: none"> <li>1. None</li> <li>2. Primary school</li> <li>3. Middle/JSS</li> <li>4. Secondary/Vocational</li> <li>5. Post-secondary</li> <li>6. Tertiary</li> <li>7. Other (specify)</li> </ol>
5. Main occupation	<ol style="list-style-type: none"> <li>1. House wife</li> <li>2. Farmer</li> <li>3. Business woman</li> <li>4. Artisan</li> <li>5. Student</li> <li>6. Government worker</li> <li>7. Other(specify)</li> </ol>
6. Marital status	<ol style="list-style-type: none"> <li>1. Married</li> <li>2. Never married</li> <li>3. Divorce</li> <li>4. Widow</li> <li>5. Other(specify)</li> </ol>
7. Religion	<ol style="list-style-type: none"> <li>1. Christian</li> <li>2. Moslem</li> <li>3. Traditional</li> <li>4. Other(specify)</li> </ol>

**INFORMATION ABOUT FATHER**

Now I am going to ask you about the father of this child.

8. What is the highest level of education	<ol style="list-style-type: none"> <li>1. None</li> <li>2. Primary school</li> </ol>

<p>this baby's father has achieved?</p> <p><i>(One response only)</i></p>	<p>3. Middle/JSS</p> <p>4. Secondary/Vocational</p> <p>5. Post-secondary</p> <p>6. Tertiary</p> <p>7. Other (specify)</p>
<p>9. What is the baby's father's main occupation?</p> <p><i>(One response only)</i></p>	<p>1. Farmer</p> <p>2. Businessman/trader</p> <p>3. Artisan</p> <p>4. Student</p> <p>5. Government worker</p> <p>6. Other(specify)</p>

10. Is your house connected to the national electricity	<p>1. Yes</p> <p>2. No</p>
11. Is your house connected to a generator?	<p>1. Yes</p> <p>2. No</p>
12. What is the main material of the wall of your house?	<p>1. Concrete</p> <p>2. Mud</p> <p>3. Wood</p> <p>4. Stalks</p> <p>5. Other(specify)</p>
13. Does your house have a working fridge?	<p>1. Yes</p> <p>2. No</p>
14. If no, where do you store your food staff?	.....
15. What do you use to cook your food at home? (Circle all that apply)	<p>1. Wood</p> <p>2. Coal pot</p> <p>3. Kerosine Stove</p> <p>4. Electric Stove</p> <p>5. Gas cooker</p> <p>6. Other(specify)</p>
16. Who is responsible for providing food for you and your Child (ren)?	<p>1. Myself</p> <p>2. The father</p> <p>3. Both of us</p> <p>4. Parents in law</p> <p>5. Other(specify)</p>
17. How often do you have money for food, cooking	<p>1. Always</p> <p>2. Sometimes</p>

fuel, and related purchases?	3. Occasionally 4. Never
18. Do you have regular maternal income?	1. Yes  2.No
19. Are you/did you at anytime exclusively replacement feed your baby (explain to the mother that exclusive replacement feeding means child does not receive any breast milk in addition to replacement foods)?	1. Yes 2. No (if no, skip to <b>section 3</b> )
19.1 If yes, which of the replacement options? Circle as applicable	1. Infant formula  2. Animal milk  3. Expressed breast milk  4. expressed Heat-treated breast milk  5. Wet-nursing  6. Other(specify)
20. How old was your baby when you first gave him or her non-human milks?	Months.....
21. How many times is your child fed per day (24hours)	.....



22. Where do you obtain drinking water for use at home? (Circle all that apply)	<ol style="list-style-type: none"> <li>1. Tap inside the house</li> <li>2. Shared or community tap</li> <li>3. Protected or covered well</li> <li>4. Unprotected or uncovered well</li> <li>5. Bore hole</li> <li>6. River, stream</li> <li>7. Other(specify)</li> </ol>
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23. Do you have regular supply of the following? Answer **Yes, No** or **NA**

2. Fuel for cooking?	Yes[ ] No [ ]
3. Electricity power?	Yes[ ] No [ ]
4. Access to safe water?	Yes[ ] No [ ]
5. Supplies of free formula at the clinic?	Yes[ ] No [ ]

24. What utensils are commonly used by you to feed liquids and semi-solids to your baby? Tick as applicable.	<ol style="list-style-type: none"> <li>1. Cup</li> <li>2. Bottle</li> <li>3. Calabash</li> <li>4. Spoon</li> <li>5. Bowl</li> <li>6. Other(specify)</li> </ol>
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**SECTION C. KNOWLEDGE ON INFANT FEEDING AND MTCT OF HIV (INFORMATION)**

25. Did you attend antenatal care during your pregnancy?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
25.1 If yes, how many times did you attend? Indicate number.	<p>.....</p>
26. Did you receive any counseling on infant feeding Options for HIV-infected mothers?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No (if no, skip to question 27)</li> </ol>

26.1. Which of these infant feeding options were you counseled on? Probe and tick as applicable.	<ol style="list-style-type: none"> <li>1. Infant formula</li> <li>2. Animal milk</li> <li>3. Expressed breast milk</li> <li>4. Expressed heat-treated breast milk</li> <li>5. Wet-nursing</li> <li>6. Other(specify)</li> </ol>
27. Did you ever exclusively breast feed your child before choosing this option/s?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
27.1. If yes, for how long did you exclusively breastfeed before adopting this option?	.....
28. How soon after delivery was your infant first put to the breast (in hours)	
29. Did another feeding mother breastfeed your infant?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
29.1 If yes, explain why	
29.2. If no, why not?	
30. Did your infant receive anything to eat/drink immediately after delivery before it was first put to the breast?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
30.1. If yes, which liquids/solids were given to the infant before any breast milk? (Probe to get the most truthful answer	
31. Is the child receiving any other liquids and semi solids currently apart from breast milk?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>
31.1. If yes, at what age did you first introduce any liquids or food (such as water, sugar water, milk, porridge, infant formula) to your baby?	Age in months.....
32. What made you to mixed feed your baby during	

exclusive breastfeeding? (that is giving other foods or liquids as well as breast milk to the baby)	
33. Were you counseled on the dangers of mixed feeding during antenatal care?	1. Yes 2. No
33.1 If yes explain	
34. At any time during your last pregnancy did you HEAR anything about mother-to-child transmission of HIV and how to feed the infant?	1. Yes 2. No(go to quest.38)
35. What is your source of information?	1. radio 2. television 3. friends 4. health workers 5. posters 6. magazines 7. hospital or clinic 8. other (please specify
36. Did this information change your thinking or your behaviour in any way?	1. Yes 2. No
37. If yes, how	1. I decided to test for HIV 2. I decided on how to feed my baby. 3. Other (Specify)

38. If a mother is not able to breastfeed, what are the options available to her in this community?  
(Circle all that apply)

(1) wet-nurse
(2) modified animal milk
(3) infant formula
(4) expressed breast milk
(5) other (Specify

39. Which of these feeding options do you think is the most culturally acceptable for feeding infants of mothers who cannot breastfeed for various reasons in your community?

Circle all that apply.

(6) wet-nurse
(7) modified animal milk
(8) infant formula
(9) expressed breast milk
(10) other (Specify

**SECTION D. ONLY APPLICABLE TO MOTHERS PRACTICING REPLACEMENT FEEDING.**

40. Which problems do you encounter in obtaining any of the foods for your infant? (Tick all that apply)

- (1) Cost
- (2) Distance to buy the food
- (3) Seasonal availability
- (4) Other: please specify \_\_\_\_\_
- (5) NA

41. Do you face any of problems in **preparing** any of the foods (including milk) your child eats?

- (1) Yes
- (2) No (go to question 42)
- (3) NA

41.1 If yes, which problems did you encounter? (Tick all that apply)

- (1) Availability of safe water
- (2) Availability of fuel
- (3) Time
- (4) Skill in preparing the foods
- (5) Others (Specify) \_\_\_\_\_
- (6) NA

42. Which foods (including milk feeds) do you find difficult to prepare?

---

43. How easy is each of these infant feeding options to come by in your community? (Interviewer, for each option, tick 'yes' for easy and 'no' for not easy and include the reason given).

	YES	NO	Reason given
(1) Animal milk			
(2) infant formula			
(3) Wet-nursing			
(4) NA			

44. What is the average cost of a tin of infant formula milk in this community?

1. Price \_\_\_\_\_ 2. DK

45. On a scale of 1-5, how expensive do you think infant formula is?

- Very Expensive 1
- Expensive 2
- Affordable 3
- Somewhat cheap 4
- Very cheap 5

46. At the current market price of a tin of infant formula milk, is it affordable for you to feed your infant with formula milk for the recommended period by health workers?

(1) Yes (2) No

46.1. If no, if infant formula is now distributed free of charge or subsidized, will it be the same? If no, why? \_\_\_\_\_

47 What are some of the implication of mothers who avoid breastfeeding or practice exclusive replacement feeding of their infants in this community? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

48. Is replacement feeding culturally accepted practice in this community?

1. Yes 2. No

48.1. If no, explain why it is not acceptable.

\_\_\_\_\_

\_\_\_\_\_

49. In this community, what are the consequences of not breastfeeding?

49.1 For the baby

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

49.2 For the mother

**Thank the mother for her time.**

FACTORS INFLUENCING THE CHOICES OF INFANT FEEDING OF HIV POSITIVE MOTHERS IN SOUTHERN GHANA: THE ROLE OF COUNSELLORS, MOTHERS, FAMILIES AND SOCIO-ECONOMIC STATUS.

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**Focus Group Discussion Guide for Mothers, Fathers and Grandmothers.**

LOCATION: \_\_\_\_\_

INTERVIEWERS: \_\_\_\_\_

NUMBER OF PARTICIPANTS: \_\_\_\_\_

GROUP: \_\_\_\_\_

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

**1. General Instructions for Interviewers**

Start with a warm-up question and later zero in to the actual research questions

Remember to thank the participants at the end of the discussion.

**2. Introduction by the moderator**

Introduce yourself and the purpose of the discussion

Hello, my name is \_\_\_\_\_ and I welcome you to this group discussion. Thank you for coming. The purpose of bringing you here today is to learn about how infants are fed in this community and also about HIV/AIDS. This information will enable us to understand better what is best to recommend as appropriate foods for our children in various circumstances.

## **Guide for FGD**

### **A. Local beliefs and perceptions about HIV**

1. What have you heard about HIV/AIDS?

---

2. Where have you heard about HIV/AIDS?

---

---

3. In this community, what words are often used to describe HIV?

---

4. In your own opinion, what causes HIV/AIDS?

---

5. Describe people's reactions to a person with HIV/AIDS.

---

5.1. Are these reactions common in this community?

6. Do you know of anyone who died of HIV/AIDS?

---

7. Describe people who you think are at risk of contracting HIV

---

7.1. Why are these people at risk?

---

8. Describe people who you think are not at risk of contracting HIV

---

8.1. Why are these people not at risk?



9. What are the possible ways through which a person can contract the disease?

**B.Mother to child transmission of HIV (MTCT)**

10 Do you know of any children who have acquired HIV?

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11. How old were these children?

12. How did they acquire the disease?

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13. Now, think of very young babies, those who have just been born, how can very young babies acquire HIV?

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14. How often babies born to HIV positive mothers who are breastfeeding get infected?

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15. What can be done to reduce the possibility that a breastfeeding mother transmits HIV to her baby?

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**C. Infant and child feeding:**

16. How are newborn babies commonly fed in this community?

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17. What do you understand by the term “exclusive breastfeeding?”

18. Is exclusive breastfeeding common in this community?

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19. For how many months do mothers in this community usually breastfeed?

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19.1 Why

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20. For how many months do mothers in this community exclusively breastfeed?

- 
21. What do you understand by the term “exclusive replacement feeding?”
22. Is exclusive replacement feeding common in this community?
23. Are there mothers in this community practicing exclusive replacement feeding?
- 23.1 If yes, what are some of the community reactions towards such mothers?

**D. Wet-nursing.**

24. Describe the conditions under which a woman will breast feed another woman’s baby in this community?

---

25. Have you ever heard of anyone who breastfed another mother’s baby?

---

25.1 Is this practice common in this community?

26. Describe people’s reactions to this practice.

---

27. In your own opinion, what are the benefits of wet nursing?

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28. In your own opinion, what are the disadvantages of wet nursing?

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**E. Expressed breast milk**

**Now I will ask you about the practice of squeezing milk from one’s breast, and STORING it to feed the infant later.**

29. In this community, do you know of any mothers who squeeze their milk and store it to feed their babies later? \_\_\_\_\_

29.1 If yes, describe how these mothers store the milk

---

30. Is this common in this community \_\_\_\_\_

31. What are some of the disadvantages of this practice?

**F. Heat-treated breast milk**

**Now I will ask you about the practice of squeezing milk from one's breast, and BOILING it before feeding it to the baby.**

32. Is the practice of squeezing and boiling breast milk common in this community?

---

33. If a mother's milk contain germs e.g. HIV, can she squeeze it and then boil it to kill the germs before giving it to her baby?

33.1 If yes, why? \_\_\_\_\_

33.2 If no, why not? \_\_\_\_\_

34. In this community, what are the consequences of not breastfeeding?

34.1 For the baby

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---

34.2 For the mother

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---

**G. infant formula**

**Now I will ask you about infant formula.**

35. What have you heard about infant formula?

---

36. Could you describe the characteristics of mothers who use infant formula to feed their babies?

---

**H. Animal milk.**

**Now I will ask you about feeding an infant with animal milk.**

37. Have you heard about mothers' feeding their babies with animal milk?

---

38. If a mother cannot breast feed her baby, which animal milks can she feed her baby with?

38.1 Probe for reasons for the types of animal milks mentioned.

**Now I will ask you about using a spoon, a bottle and so on to feed a baby.**

39. What utensils are commonly used to feed liquids and semi-solids to a baby in this community?

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40. Of all the utensils you have named, which one is most commonly used?

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**Thank the participants for their time.**

## **CONSENT FORM FOR HIV POSITIVE MOTHERS FOR FACILITY INTERVIEW AND FGDs.**

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**FACTORS INFLUENCING THE CHOICES OF INFANT FEEDING OF HIV POSITIVE MOTHERS IN SOUTHERN GHANA: THE ROLE OF COUNSELLORS, MOTHERS, FAMILIES AND SOCIO-ECONOMIC STATUS.**

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### **PURPOSE OF THE STUDY**

We are inviting you to take part in a study, which is being conducted by the Department of Public Health of the University of Cape Town and the Health Research Unit of Ghana Health Service.

The purpose of this research study is to understand what men and women think about issues around HIV/AIDS, infant feeding, breast-feeding, and mother-to-child transmission of HIV. The information obtained from this study will be used to plan appropriate feeding recommendations for infants of HIV positive women. The overall aim of the study is to reduce the transmission of HIV from mother to child through breast-feeding and also to continue promoting, protecting and supporting breast-feeding as the best food for an infant. You were asked to take part because you are HIV-infected mother and have a child between 0-12 months of age.

### **PROCEDURE**

If you agree to take part, we will ask you how you feel about issues around HIV/AIDS, infant feeding, breastfeeding, and mother-to-child transmission of HIV. We will ask you several questions about these issues and record your responses on paper. We will also want to ask you questions on some parts of your house that are important in matters relating to infant feeding. These include your source of water supply, storage of drinking water and food.

Your participation in this study will last for between 45 minutes to 1 hour. There are no correct answers to these questions. You can choose not to answer any question you do not want to answer.

### **POTENTIAL RISKS/DISCOMFORTS.**

There are no physical risks to you if you take part in the interview. However, some of the questions may be sensitive, and you may feel uncomfortable. You are free to decline to answer any question. You may be worried that the information you give may fall into wrong hands. We wish to assure you that we will keep the information you give as securely and under lock and the information will not be made available to those outside the study.

## **BENEFITS**

By taking part in this study, you will have the chance to share your views and experience, and obtain information about HIV/AIDS prevention, prevention of mother-to-child transmission of HIV, counselling and care following the interview. The results of the study will be used to improve appropriate infant feeding practices for children and promotion of breast-feeding in this community. The results will also be shared with the Ministry of Health and Ghana Health Service, and will help in the development of National HIV/AIDS guidelines on infant feeding. What you tell us will remain private and can never be linked back to you.

## **CONFIDENTIALITY**

The interview will take place in a private place. We will tape record the interview and write some notes to help us remember all that was discussed. Your family name will not be written in the notes nor recorded on the tapes. You will not be identified in any report or publication about this study. All the information you give us from this interview will be held private. This information will be accessible only to research personnel, who will listen to the tapes, make written notes, and use the notes for research purposes only. After the notes are taken from the tapes, the tapes will be destroyed. You are assured that personal information we obtain from you will be kept in the strictest confidence.

## **VOLUNTARINESS AND RIGHT TO WITHDRAW**

Your participation is completely voluntary. You can ask questions on anything that you don't understand. You have the right to terminate the interview at anytime, or to decline to answer any question without penalty. If you decide not to take part in this study, your refusal to participate will not affect or influence the subsequent care that you will receive.

If you want to talk to anyone about this study, you should contact Mr. Laar Alexander Suuk, who will be at HRU-GHS. You can also call him on 0244484291 or e-mail to [alexlaar2002@yahoo.co.uk](mailto:alexlaar2002@yahoo.co.uk)

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Consent form to be signed by interviewee

### **Subject's Agreement**

I have read the information provided above, or it has been read and explained to me by PMTCT Counselor in the language that I fully understand. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction. I consent

voluntarily to participate as a participant in this study and understand that I have the right to withdraw from the study at any time.

Name: \_\_\_\_\_

Signature/thumbprint: \_\_\_\_\_

Date:  
\_\_\_\_\_

## **CONSENT FORM FOR FATHERS AND GRANDMOTHERS FOR FGDs.**

FACTORS INFLUENCING THE CHOICES OF INFANT FEEDING OF HIV POSITIVE MOTHERS IN SOUTHERN GHANA: THE ROLE OF COUNSELLORS, MOTHERS, FAMILIES AND SOCIO-ECONOMIC STATUS.

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### **PURPOSE OF THE STUDY**

We are inviting you to take part in a study, which is being conducted by the Department of Public Health of the University of Cape Town and the Health Research Unit of Ghana Health Service.

The purpose of this research study is to understand what men and women think about issues around HIV/AIDS, infant feeding, breast-feeding, and mother-to-child transmission of HIV. The information obtained from this study will be used to plan appropriate feeding recommendations for infants of HIV positive women. The overall aim of the study is to reduce the transmission of HIV from mother to child through breast-feeding and also to continue promoting, protecting and supporting breast-feeding as the best food for an infant.

### **PROCEDURE**

If you agree to take part, we will ask you how you feel about issues around HIV/AIDS, infant feeding, breastfeeding, and mother-to-child transmission of HIV. We will ask you several questions about these issues and record your responses.

Your participation in this study will last for between 45 minutes to 1 hour. There are no correct answers to these questions. You can choose not to answer any question you do not want to answer.

### **POTENTIAL RISKS/DISCOMFORTS.**

There are no physical risks to you if you take part in the interview. However, some of the questions may be sensitive, and you may feel uncomfortable. You are free to decline to answer any question. You may be worried that the information you give may fall into wrong hands. We wish to assure you that we will keep the information you give as securely and under lock and the information will not be made available to those outside the study.

### **BENEFITS**



By taking part in this study, you will have the chance to share your views and experience, and obtain information about HIV/AIDS prevention, prevention of mother-to-child transmission of HIV, counseling and care following the interview. The results of the study will be used to improve appropriate infant feeding practices for children and promotion of breast-feeding in this community. The results will also be shared with the Ministry of Health and Ghana Health Service, and will help in the development of National HIV/AIDS Guidelines on infant feeding. What you tell us will remain private and can never be linked back to you.

### **CONFIDENTIALITY**

The interview will take place in a private place. We will tape record the interview and write some notes to help us remember all that was discussed. Your family name will not be written in the notes nor recorded on the tapes. You will not be identified in any report or publication about this study. All the information you give us from this interview will be held private. This information will be accessible only to research personnel, who will listen to the tapes, make written notes, and use the notes for research purposes only. After the notes are taken from the tapes, the tapes will be destroyed. You are assured that personal information we obtain from you will be kept in the strictest confidence.

### **VOLUNTARINESS AND RIGHT TO WITHDRAW**

Your participation is completely voluntary. You can ask questions on anything that you don't understand. You have the right to terminate the interview at anytime, or to decline to answer any question without penalty. If you decide not to take part in this study, your refusal to participate will not affect or influence the subsequent care that you will receive.

If you want to talk to anyone about this study, you should contact Mr. Laar Alexander Suuk, who will be at HRU. You can also call him on 0244484291 or e-mail to [alexlaar2002@yahoo.co.uk](mailto:alexlaar2002@yahoo.co.uk)

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Consent form to be signed by interviewee

### **Subject's Agreement**

I have read the information provided above, or it has been read and explained to me in the language that I fully understand. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction. I consent voluntarily to

participate as a participant in this study and understand that I have the right to terminate the interview at any time.

Name: \_\_\_\_\_

Signature/thumbprint: \_\_\_\_\_

Date: \_\_\_\_\_

## **Appendix 1.**

### **Summary of proposal**

**TITLE OF STUDY: FACTORS INFLUENCING THE CHOICES OF INFANT FEEDING OF HIV POSITIVE MOTHERS IN SOUTHERN GHANA: THE ROLE OF COUNSELLORS, MOTHERS, FAMILIES AND SOCIO-ECONOMIC STATUS.**

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In Ghana breast-feeding is nearly universal. Ninety-seven percent of all children born in the past five years were breastfed for some time (Awumbila, 2003). Even after age 6 months when food supplementation becomes necessary, breastfeeding may continue until after the child's second birthday (Ghana Statistical Service, 1999).

Breastfeeding remains an important route of acquisition of HIV-1 infection for infants. It is estimated that 15% of infants born to HIV infected women in Ghana, acquire the infection through breastfeeding (MOH/GHS, 2003). These cases of mother-to-child transmission (MTCT) represent a high proportion of the disease burden and these infections are reasonably preventable. If infection rates are not arrested, the current prevalence rate is expected to increase from 3% to more than 8% by 2009 (Tobi and Tkatchenko, 2005).

Given the risk of HIV transmission associated with breastfeeding, the current international guidelines for infant feeding state that , “if it is acceptable, feasible, affordable, sustainable and safe, (AFASS) exclusive replacement feeding (ERF) should be recommended, otherwise, exclusive breastfeeding (EBF) be done during the first months of the baby’s life” (Gupta et al., 2002).

Since the incorporation of the guidelines into Mother & and Child Health (MCH) services in Ghana in 2006, little has been done with respect to assessing the implications of this for HIV-positive mothers, as well as the enabling environment needed in its (the guidelines) implementation. Through investigating the AFASS of various infant feeding options, this study seeks to contribute to the limited knowledge in this area. It will also draw the attention of policy

makers and implementers to the objective of strengthening healthful feeding practices in Ghana. The aim of this study is to assess the perspectives of HIV positive Ghanaian mothers and communities on the infant feeding options recommended for HIV infected mothers.

### **Possible Risks or discomforts**

There are no any physical risks to subjects who will be taking part in this study. However, some of the questions may be sensitive and they may feel uncomfortable. They may feel free to decline to answer any questions if they wish.

### **Anticipated benefits**

By taking part in this study, subjects will have the chance to share their views and experience, and obtain information about HIV/AIDS prevention, prevention of mother-to-child transmission of HIV, counseling and care following the interview.

### **Anticipated gain in knowledge**

The results of the study will be used to improve appropriate infant feeding options for children in their communities. The results will also be shared with the Ministry of Health and will help in the development of National HIV/AIDS Guidelines on infant feeding.

### **Privacy**

To ensure privacy, subject's names will not be written in the notes nor recorded on the tapes. They will not be identified in any report or publication about this study. All the information they will give from this interview will be held private. This information will be accessible only to research personnel, who will listen to the tapes, make written notes, and use the notes for research purposes only. After the notes are taken from the tapes, the tapes will be destroyed

### **Confidentiality**

Information collected from subjects will be handled with strict confidentiality and will be used purely for academic purposes.

**PART E**

**POLICY BRIEF**

**Summary of findings from:**

**Factors influencing the choices of infant feeding of HIV positive mothers in southern Ghana:  
the role of counsellors, mothers, families and socio-economic status.**

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## **BACKGROUND**

In Ghana, almost 3 percent of pregnant women are infected with HIV and an estimated 15 percent of infants born to them acquire the infection through breastfeeding (NACP, 2009).

Since the adoption of the WHO infant feeding guidelines for HIV women into Mother and Child Health (MCH) services in Ghana in 2001, little has been done with respect to assessing the implications of this for HIV-positive mothers, as well as the enabling environment needed for their implementation. The guidelines call for the avoidance of breast-feeding by HIV-positive mothers when exclusive replacement feeding (ERF) is Acceptable, Feasible, Affordable, Sustainable and Safe (AFASS). Other feeding options recommended are to use heat treated expressed breast milk or wet nursing of the newborn by HIV-negative women when the AFASS criteria is not possible (WHO, 2003). When AFASS criteria cannot be met, mothers are advised to exclusively breast-feed (EBF) and avoid mixed feeding. This policy brief draws on evidence from a recent study which investigated the factors influencing the choices of infant feeding of HIV-positive mothers in Ghana through an assessment of the perspectives of HIV-positive mothers and family members (i.e. fathers and grandmothers) in two districts.

## **METHODS USED**

A mix of qualitative and quantitative approaches was used. A cross-sectional hospital-based survey of 40 HIV-positive mothers with infants under the age of 12 months across 3 hospitals in Tema and Manya-Krobo districts was carried out. In addition, 6 FGDs were conducted with HIV-positive mothers with infants under the age of 12 months; fathers and grand-mothers.

## **KEY FINDINGS**

## **Knowledge, understanding and practices of HIV-positive mothers with respect to infant feeding.**

All infants in the study had been breastfed (BF) although not exclusively and early mixed feeding patterns were widely practiced amongst infants under the age of 6 months. Across both districts, most mothers understood EBF (exclusive breast-feeding) and ERF (exclusive replacement feeding) correctly. However, they were unfamiliar with other replacement feeding options (animal milk, wet-nursing and expressed heat-treated breast milk), which they reported had not been discussed in detail during counseling.

## **Influence of family members on infant feeding practices of HIV-positive mothers**

Despite fathers and grandmothers in both districts demonstrating a good understanding of the link between breastfeeding and the HIV infection and the benefit of replacement feeding in reducing this risk, they argued for the continuation of breastfeeding for reasons of mother-child bonding.

*“Non-breast fed children miss the motherly love, bonding and communication that is usually created between the mother and the baby in the course of breastfeeding, through voice and smell and by touch.”(Grandmothers FGD- Manya-Krobo).*

In addition, they also supported mixed-feeding (breast-feeding and the introduction of water and foods) during infancy based on cultural norms.

*“The new born baby is welcomed by giving water or herbal mixture for it to become part of the family as custom demands. Such traditional medicines have the potency of making the baby to fight against evil spirits which come its way” (Fathers FGD-Manya-Krobo).*

*“The giving of water to the new born baby is just like how one welcomes a visitor or a stranger to the home with water” (Grandmothers FGD- Tema).*

## **Influence of socio-economic factors on infant feeding practices**

Socio-economic barriers to replacement feeding included cost associated with formula milk, cooking utensils, transport to purchase infant formula and access to storage facilities (i.e. freezers and refrigerators), clean water and access to a regular income. These barriers are important factors contributing to the continuation of mixed feeding.

*“A tin of formula milk is small and expensive, it also finishes very fast if the baby is feeding well. The cost of a tin of infant formula milk of sixteen Ghana cedis (GH¢16 ≈ (\$11) is compelling some of us to manage the formula milk with some local foods hence unable practice replacement feeding” (Mothers FGD-Tema).*

## **Community perceptions about HIV/AIDS**

The problem of stigma associated with HIV/AIDS generally and more specifically, concern over the social consequences and stigmatization associated with not breastfeeding in terms of giving rise to suspicion over being infected with the virus was reported.

*“Immediately people realize that you are not breastfeeding your baby, they just conclude that you have the disease AIDS. If they finally get to know you have the disease, they will make you the subject of discussion and a laughing stock in the area.” (Mothers FGD- Manya-Krobo).*

## **CONCLUSION**

- HIV-positive mothers had a good knowledge and understanding of EBF and ERF, however adherence to them was poor and mixed feeding was common.
- HIV-positive mothers had access to counseling on replacement infant feeding options but there was an emphasis on EBF and ERF and not on other replacement options (expressed heat-treated breast milk, wet-nursing and animal milk), which were regarded as the least acceptable and feasible options by mothers, fathers and grandmothers.



- HIV-positive mothers faced various obstacles (socio-economic, familial and stigma) in carrying out replacement feeding. Family members and communities have a strong influence on mothers' infant feeding practices.

## **POLICY AND PROGRAMME RECOMMENDATIONS.**

- Introduce a multi-dimensional behaviour change strategy which involves mothers, family members and significant community members in order to change perceptions, understanding and attitudes to ERF and EBF and at the same time, explicitly deal with the risk in terms of infant survival associated with mixed feeding.
- Involve male partners in ANC and PNC if they are to understand the risks of mixed feeding and the importance of adherence to either EBF or ERF. Measures to support both husband and wife must be put in place to prevent the negative effects of this on their relationship.
- Explore with counselors, why the full range of feeding options (that is heat- treated breast milk, animal milk and wet-nursing) are not discussed. This will also provide an opportunity for discussing the associated misconceptions that are prevalent and associated with these options.

Failure by policy makers to incorporate these issues will continue to lead to a gap between well-intended policies and programmes and actual practices of HIV-positive mothers.

## **REFERENCES:**

NACP (2009) National HIV prevalence and AIDS Estimates Reports 2008-2015. Accra: National AIDS Control Programme, Ghana Health Service, Ministry of Health.

WHO (2003) WHO/UNICEF/UNFPA/UNAIDS. HIV and Infant Feeding: Guidelines for Decision makers. Reviewed. Geneva, Switzerland, World Health Organization.